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Alaska Cedar

A Bibliography with Abstracts

Compiled by

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FOREWORD

This bibliography contains references to North American and European literature containing information about Alaska-cedar (*Chamaecyparis nootkatensis* (D. Don) Spach).

References are listed alphabetically by author, and abstracts are given for many of those considered more significant. A subject matter index is included on pages 42-45, and a list of scientific and common names of tree species mentioned is on pages 46-47.

The single, most useful source of references for the bibliography was "Forestry Abstracts," followed by "Bibliography of Agriculture." Thanks are due to reviewers for pointing out many additional references not found by the compiler and to others who helped in preparation.

The compiler would appreciate learning of additional articles on Alaska-cedar not included here.

BIBLIOGRAPHY

1. Anonymous.
   1892. Sundry statistics. J. Roy. Hort. Soc., pp. 572-574 (Ed. by F. J. Chittendon) London.

Tables contain consensus as to conifers suited for particular uses. Alaska-cedar is shown suitable for the following situations:

Parks, large gardens and pleasure grounds, smaller gardens, rock gardens, and windbreaks.

2. Anonymous.
   1929. Properties and uses of Alaska cypress. The Timberman 30(11): 39-40.

Discusses briefly the nomenclature, description, character of stands, working qualities, and uses of Alaska-cedar. Log and lumber grading rules are also discussed.

3. Anonymous.
   1959. Canadian building timbers: British Columbia species. Wood 24 (8): 322-325.

Alaska-cedar wood is highly regarded in Canada and the U.S. for interior woodwork and paneling. The yellow timber has a fine texture and is responsive to finishing treatments. Freshly cut wood has a strong but pleasant aromatic scent which is generally absent in seasoned material. The wood weighs about 29 pounds per cubic foot in seasoned condition. Shrinkage in drying is slight, and the wood is noted for dimensional stability in service. It is used for both construction and decoration.

4. Abrams, Leroy.
   1923. An illustrated flora of the Pacific States, Washington, Oregon, and California. Vol. 1, Ophioglossaceae to Aristolochiaceae. 557 pp., illus. California: Stanford Univ. (Second printing with minor corrections Aug. 1, 1940, 538 pp., illus.)

5. Ackers, C. P.
   1947. Practical British forestry. Ed. 2, 394 pp., illus. London: Oxford Univ. Press.

6. Allen, G. F.
   1916. The forests of Mount Rainier National Park. U.S. Dep. Int., 32 pp., illus.

Alaska-cedar occurs in the park up to 7,000-foot elevation. It is common on northern exposures, along streams, and in basins at the head of canyons. It also grows on crests and ridges where frequent showers and fogs supply the moisture it demands. In sheltered localities, it grows to a height of 80 feet, but is commonly small, with a bent and twisted stem and somewhat scrubby appearance. A general description is given.

7. Aller, Alvin R.
1956. A taxonomic and ecologic study of the flora of Monument Peak, Oregon. Amer. Midland Natur. 56: 454-472, illus.

8. American Forestry Association.
1955. These are the champs. Amer. Forests 61(9): 31-40.

The largest Alaska-cedar known is located in Olympic National Park, Washington: circumference at 4-1/2 feet is 21 feet; height 175 feet; spread 27 feet 5 inches. Reported by Robert L. Wood, Poulsbo, Wash.

9. American Plywood Association.
1966. U.S. Product Standard PS 1-66 for softwood plywood-construction and industrial, together with DFPA grade marks. Amer. Plywood Ass., Tacoma, Wash., 28 pp., illus.

10. Andersen, Harold E.
1959. Silvical characteristics of Alaska-cedar (*Chamaecyparis nootkatensis*). U.S. Forest Serv. Alaska Forest Res. Center Sta. Pap. 11, 10 pp., illus.

Describes the distribution, habitat, life history, and varieties of Alaska-cedar.

11. Anderson, James R.
1925. Trees and shrubs; food, medical, and poisonous plants of British Columbia. Dep. Educ., 165 pp., illus. Victoria, B.C.: King's Printer.

A brief description of the tree's appearance, uses, and range in Alaska and British Columbia; odor of the wood is described as "strong and pleasant."

12. Anderson, J. P.
1959. Flora of Alaska and adjacent parts of Canada. 543 pp., illus. Ames: Iowa State Univ. Press.

13. Andrews, Clarence L.
1934. Russian shipbuilding in the American colonies. Wash. Hist. Quart. 25: 3-10.

Describes the use of Alaska-cedar for shipbuilding in Alaska by the early Russian colonists.

14. Archer, C. F.
1952. Kiln-drying schedules for British Columbia woods. Forest Prod. Lab., Can. Mimeogr. V-1012.

Alaska-cedar seasons readily, and 1- and 1-1/2-inch stock may be dried successfully by the same schedule as that for western redcedar. Two-inch stock, particularly wide clears, requires more careful treatment, and a schedule is given.

15. Arno, Stephen F.
1966. Interpreting the timberline: An aid to help park naturalists to acquaint visitors with the subalpine-alpine ecotone of western North America. 206 pp., illus. (M.F. thesis, Univ. Mont., printed for distribution by West. Res. Off., U.S. Nat. Park Serv., San Francisco.)

Alaska-cedar is the highest reaching tree species, ascending beyond 7,000 feet and growing out of rock cliffs in the Olympic rain shadow. Krummholz of this species have advantages over others in severe alpine environments because of extremely durable wood and more flexible branchlets that are less apt to be scoured off. Roots of Krummholz Alaska-cedar may extend 100 feet. Root sprouting and layering probably explain scrubline development of Alaska-cedar shrubs whose foliage may form circles of nearly 50-foot diameter. The condition of Alaska-cedar at timberline throughout its range is discussed.

16. Aulin-Erdtman, Gunhild.
1950. Studies of the tropolone series I. Thujaplicins and nootkatin. Acta Chem. Scand. 4: 1031-1041.

Ultraviolet absorption spectra and molecular weight determinations are given for a new natural compound, nootkatin, which has been isolated from the heartwood of *Chamaecyparis nootkatensis*. Nootkatin is shown to be a tropolone derivative.

17. Babb, M. F.
1959. Ornamental trees and shrubs for Alaska. Alaska Agr. Exp. Sta. Bull. 24, 39 pp., illus.

Contains a brief description of Alaska-cedar. In Alaska, the species has only limited suitability for landscaping--in southeast and extreme southern Alaska.

18. Baerg, Harry J.
1955. How to know the western trees; pictured keys to the native and cultivated trees found growing in the Rocky Mountains and westward, with suggestions and aids for their study. 170 pp., illus. Dubuque: W. C. Brown Co.

19. Bailey, Harold E., and Bailey, Virginia Long.
1941. Forests and trees of the western National Parks. U.S. Nat. Park Serv. Conserv. Bull. 6, 129 pp., illus.

20. Bailey, L. H.
1933. The cultivated conifers in North America, comprising the pine family and the taxals (successor to the Cultivated Evergreens). 404 pp., illus. New York: The Macmillan Co. (Second printing, 1948.)

Contains a brief description of *Chamaecyparis nootkatensis*, and describes four varieties: var. *compacta*, var. *glauca*, var. *lutea*, and var. *pendula*.

21. Bailey, Virginia L., and Bailey, Harold E.
1949. Woody plants of the western National Parks; containing keys for the identification of trees and shrubs. Amer. Midland Natur. Monogr. 4, 274 pp., illus. Notre Dame, Ind.: Univ. Press.

Contains a key to Alaska-cedar.

22. Baillaud, L., and Courtot, Y.
1961. Nouvelles remarques sur le rythme de la repartition des rameaux du *Chamaecyparis nootkatensis*. (New remarks on the "rhythm" of distribution of branchlets of *Chamaecyparis nootkatensis*). Ann. Sci. Univ. Besancon (2^{me}Ser., Bot.) 17: 63-68. (In French.)

A study of the branching habits of Alaska-cedar. Spacing between leaf axils increased from the base to the apex of branches.

23. Baillaud, Lucien, and Courtot, Yvette.
1955. Correlations et polarites dans la morphologie d'un cypres. (Correlations and polarities in the morphology of a cypress.) Ann. Sci. Univ. Besancon (2^{me}Ser., Bot.) 6: 83-93. (In French.)

A study of the morphology of Alaska-cedar.

24. Baker, Frederick S.
1949. A revised tolerance table. J. Forest. 47: 179-181.

Alaska-cedar is classed as "tolerant" on a scale of "very tolerant," "tolerant," "intermediate," "intolerant," and "very intolerant."

25. Baker, William H.
1951. Plants of Fairview Mountain, Calapooya Range, Oregon Amer. Midland Natur. 46: 132-173, illus.

Alaska-cedar and mountain hemlock are characteristic trees in the Hudsonian zone, ranging from about 5,000- to 6,000-foot elevation.

26. Balfour, F. R. A.
1932. The history of conifers in Scotland and their discovery by Scotsmen. Conifers in cultivation. Conifer Conf. Roy. Hort. Soc. Rep. 1931: 177-211.

Cupressus nootkatensis was discovered by Menzies and named by Lambert after the sound on the west of Vancouver Island where Captain Colnett's ship, Prince of Wales, anchored in July 1787. The tree was brought into cultivation in 1853. No cypress is of more symmetrical habit or of hardier constitution.

27. Bancroft, Hubert Howe.
1886. History of Alaska, 1730-1885. 775 pp. San Francisco: The History Co. Publishers. (Reprinted, New York: Antiquarian Press.)

Yellow-cedar is the most valuable timber found on some of the islands in the Alexander Archipelago and in the neighborhood of Sitka, and frequently attains a height of 100 feet and diameters of 5 or 6 feet. The wood is in demand by shipbuilders and cabinetmakers because of its fine texture, durable quality, and aromatic odor.

28. Bannan, M. W.
1950. The frequency of anticlinal divisions in fusiform cambial cells of *Chamaecyparis*. Amer. J. Bot. 37: 511-519.

Frequency of anticlinal divisions in fusiform cambial cells of *Chamaecyparis lawsoniana*, *C. thyoides*, and *C. nootkatensis*, was studied. Nearly all anticlinal divisions were of the pseudotransverse type, and occurred as often as three or four times a year when growth was vigorous.

29. _____
1950. Abnormal xylem rays in *Chamaecyparis*. Amer. J. Bot. 37: 232-237.

Abnormal rays, such as reported previously for *Thuja*, *Juniperus*, and *Libocedrus*, occur also in *Chamaecyparis*. They are larger than ordinary rays and differ in the arrangement and structure of the cells. The abnormal rays are described in detail. Three species of *Chamaecyparis* were studied; *C. lawsoniana*, *C. thyoides*, and *C. nootkatensis*.

30. _____
1951. The annual cycle of size changes in the fusiform cambial cells of *Chamaecyparis* and *Thuja*. Can. J. Bot. 29: 421-437.

In stems exceeding a few inches in diameter, most of the pseudotransverse divisions involved in the multiplication of fusiform cambial cells occur toward the end of the growing season. Often these aestival transverse divisions are immediately followed by extensive elongation of the newly formed cambial cells, especially at their overlapping tips. In the succeeding year, relatively slight elongation ensues during the development of the first quarter of the annual ring, but through the succeeding quarters the amount of extension increases and is usually maximal in the final quarter. The actual rates of elongation remain undetermined. The multiplication of fusiform initials is accompanied by loss, most of the failure taking place during the last quarter. Generally the fusiform initials with the most extensive ray contacts survive and enlarge, and those with poor ray associations fail or are reduced to potential ray initials. The elongations and multiplication of fusiform initials tend to produce local ray deficiencies. Reduction of the fusiform initials with the poorest ray contacts to ray initials, rectifies to a varying extent the ray shortages in those areas. (Author's summary.)

31. _____
1951. The reduction of fusiform cambial cells in *Chamaecyparis* and *Thuja*. Can. J. Bot. 29: 57-67.

The loss of fusiform initials from the cambium, which is of frequent occurrence in all parts of the tree, takes place in different ways. Some cambial cells seem gradually to fail and are shortly lost from the cambium by maturation into more or less imperfect xylem or phloem elements. The majority are transversely subdivided by one or a succession of anticlinal

divisions which begin near the center of the fusiform initial and usually extend to the daughter cells. The resulting segments shorten through the following periclinal divisions, some disappearing during the process of shortening and others undergoing transformation to rays initials. Nearly all new rays in the secondary body originate in this manner. (Author's summary.)

32. _____
1952. The microscopic wood structure of North American species of *Chamaecyparis*. Can. J. Bot. 30: 170-187.

The trends in variation in different parts of the tree with regard to tracheid and ray cell dimensions, size and distribution of rays, size and arrangement of pits, and thickness of cell walls were compared between three species of American *Chamaecyparis* and other Cupressaceae. Intraspecific variability is usually so extensive that specific ranges overlap widely. No single microscopic character is entirely diagnostic, but certain structural features are valuable when used together.

33. _____
1966. Spiral grain and anticlinal divisions in the cambium of conifers. Can. J. Bot. 44: 1515-1538.

Discusses the orientation of pseudotransverse divisions in the cambium of conifers and presents in tabular form the sequels to 40,000 pseudotransverse divisions, with reference to failure or lineal continuation of sister fusiform initials arising therefrom, in 25 conifer species, including Alaska-cedar.

34. _____ and Bayly, Isabel L.
1956. Cell size and survival in conifer cambium. Can. J. Bot. 34: 769-776.

Discusses the process of division and survival of fusiform initials in conifers. Length of fusiform initials at pseudotransverse division, and information on surviving and failing fusiform initials of 15 conifers, including Alaska-cedar, are tabulated.

35. _____ and Whalley, Barbara E.
1950. The elongation of fusiform cambial cells in *Chamaecyparis*. Can. J. Res. 28C(3): 341-355.

After their origin, sister fusiform initials usually elongated rapidly. Rate and amount of extension varied, often proceeding in a somewhat periodic fashion. Growth appeared to be apical, "intrusive" in the sense that the elongating tips thrust between other cells. No evidence was found to support the theory of simultaneous elongation of considerable portions of adjoining walls by "symplastic" growth.

36. Bannister, M. H.
1962. Prospects for selection in the cypresses. New Zeal. J. Forest. 8: 545-559.

Reviews the distribution and characteristics of *Cupressus* and *Chamaecyparis*, the occurrence of natural hybrids, and the possibility of breeding for superior qualities.

37. Bauger, E., and Smitt, A.
1960. Et treslags- og proveniensforsok pa Stad. (An experiment on tree species and provenances on Stad.) Medd. Vestland. Forstl. Forsoekssta. 11(2)34: 61-121, illus. (In Norwegian.)

Alaska-cedar from Chichagof Island, Alaska, was planted in 1922 as 2-2 planting stock. Seventy percent survived. Most were about 40-50 cm. high but a few were 1.5 meters when sheltered. They are green and look healthy but have not been able to grow above the surrounding vegetation because of wind. Cones with seed were found on even the small plants. The species is not suitable for planting on the outer coast because of wind.

38. Becking, Rudy W.
1956. Die naturlichen Douglasien-Waldgesellschaften Washingtons und Oregons. (The forest associations of Douglas-fir in its natural range in Washington and Oregon.) Allg. Forst-und Jagdzeitung 127(2/3): 42-56, illus. (In German. English summary.)

Alaska-cedar is included in the tree species found in the subalpine salal-Pseudotsuga (Gaultherieto-Pseudotsugetum Subalpinum) association characteristic for elevations from 3,000 feet to timberline (7,000-8,000 feet) in Oregon and Washington.

39. Bender, F.
1963. Cedar leaf oils. Can. Dep. Forest., Forest Prod. Res. Br. Pub. 1008, 16 pp., illus.

Describes methods of producing oil from leaves of *Thuja occidentalis*, *T. plicata*, *Juniperus virginiana*, and *Chamaecyparis nootkatensis*, and gives data on yields, production, and prices. Some properties of the oil are tabulated, and a brief description is given of the industry in Canada and the U.S. with details of the main commercial outlets in Canada.

40. Benson, Gilbert Thereon.
1930. The trees and shrubs of western Oregon. Contrib. Dudley Herb. Vol. 2, 170 pp., illus. Calif.: Stanford Univ. Press.

Briefly reviews nomenclature and distribution of Alaska-cedar in Oregon. Alaska-cedar is listed, along with *Pinus albicaulis*, *Abies lasiocarpa*, and *Tsuga mertensiana*, as the most distinctive trees in the Hudsonian zone in the high peaks of the Cascade, Siskiyou, and Coast Ranges.

41. Berry, James B.
1924. Western forest trees. 212 pp., illus. New York: Dover Publ., Inc. (Corrected reprint of original publication by World Book Co., 1964)

42. Betts, H. S.
1929. The strength of North American woods. U.S. Dep. Agr. Misc. Pub. 46, 17 pp.

Contains tables showing the properties of various woods, actual and comparative, with explanations.

43. _____
1954. American woods. U.S. Dep. Agr. [rev. 1953], 4 pp., illus.

Brief discussion of the range, silvical characteristics, supply, wood properties, and uses of Alaska-cedar.

44. Blackerby, Alva W.
1945. Opportunities for minor wood product industries in Alaska. U.S. Forest Serv., Alaska Region, 20 pp., illus.

45. Bones, J. T.
1963. Relating outside- to inside-bark diameter at top of first 16-foot log for southeast Alaska timber. U.S. Forest Serv. North. Forest Exp. Sta. Tech. Note 52, 2 pp.

Shows conversion factors relating diameter outside bark to diameter inside bark for *Tsuga heterophylla*, *Picea sitchensis*, *Chamaecyparis nootkatensis*, and *Thuja plicata*, with information on the number and size of sample trees measured.

46. Bowers, Nathan A.
1942. Cone-bearing trees of the Pacific coast. 169 pp., illus. New York, London: Whittlesey House, div. McGraw-Hill Book Co.

Gives the description, distribution, and some general information about Alaska-cedar.

47. _____
1956. Cone-bearing trees of the Pacific coast. Ed. 5 (rev.), 169 pp., illus. Palo Alto, Calif.: Pacific Books.

48. British Columbia Forest Service.
1957. Continuous forest inventory of British Columbia. 223 pp. Dep. Lands & Forests, Victoria.

49. British Standards Institute.
1955. Nomenclature of commercial timbers including sources of supply. 144 pp. London: Waterlow & Sons, Ltd.

Lists scientific, standard, and common names, sources of supply, and wood properties of many woods, including Alaska-cedar.

50. Britton, N. L., and Shafer, J. A.
1908. North American trees; being descriptions and illustrations of the trees growing independently of cultivation in North America, north of Mexico and the West Indies. 894 pp., illus. New York: Henry Holt & Co.

51. Brockman, C. Frank.
1947. Flora of Mt. Rainier National Park. U.S. Dep. Int., 170 pp., illus.

Alaska-cedar is a conspicuous tree of the Canadian zone between 3,000 and 5,000 feet. Foliage is scalelike, the bark is ash gray and flaky, cones are small and globular, and the branches have a characteristic

drooping appearance as if wilted. This latter character is particularly noticeable along the Paradise Valley highway between Ricksecker Point and Narada Falls.

52. _____
1949. Conifers of the Cascades. Univ. Wash. Arbor. Bull. 12: 11-13, illus.

Just below the subalpine meadow country, the most characteristic tree association is composed of noble fir, Alaska-cedar, and western white pine. Intermingled with these principal species are Douglas-fir and western hemlock.

53. _____
1949. Trees of Mount Rainier National Park. 49 pp., illus. Seattle: Univ. Wash. Press.

Alaska-cedar is a component of the intermediate forest in elevations from 4,000 to 5,200 feet; the subalpine forest, from 5,000 to 6,500 feet; and the timberline forest from 6,500 to 7,000 feet. In the Park, it is found most easily along the Paradise Valley highway in the vicinity of Canyon Rim and Narada Falls. It is a medium-sized tree from 75 to 100 feet tall and from 1-1/2 to 2 (occasionally 3) feet in diameter, but smaller in exposed situations. A general description is given.

54. Brooke, R. C.
1965. The subalpine mountain hemlock zone. Part II. Ecotopes and biogeocoenotic units. In Ecology of western North America. Vol. 1. V. J. Krajina, ed. pp. 79-101. Univ. Brit. Columbia, Dep. Bot.

The subalpine mountain hemlock biogeoclimatic zone occurs on the crests and slopes of innumerable peaks or ridges forming the Coast Ranges and, in the study area which includes part of Garibaldi Park and the North Shore Mountains, it is found at elevations between approximately 3,000 and 5,500 feet. The zone is characterized in detail. Within the forested biogeocoenotic units, Alaska-cedar occurs in association with *Tsuga mertensiana* and *Abies amabilis*. Lesser vegetation is also listed.

55. Brown, H. P., and Panshin, A. J.
1934. Identification of the commercial timbers of the United States. 223 pp., illus. New York, London: McGraw-Hill Book Co.

Describes general characteristics and minute anatomy of many woods. Alaska-cedar has an odor resembling that of raw potatoes, with a faint, bitter, somewhat spicy taste. The wood is comparable to that of *Chamaecyparis lawsoniana*.

56. _____, Panshin, A. J., and Forsaith, C. C.
1949. Textbook of wood technology. Vol. 1, Structure, identification, defects, and uses of the commercial woods of the United States. 652 pp. New York: McGraw-Hill Book Co.

57. Browne, J. E.
1962. Standard cubic-foot volume tables for the commercial tree species of British Columbia, 1962. Brit. Columbia Forest Serv., 107 pp.

Appendices contain standard cubic-foot volume tables and merchantable volume factors for Alaska-cedar.

58. Campbell, R. B., and Robertson, J. Monteath.
1952. The structure of nootkatin; an X-ray determination. Chem. & Ind. Dec. 27: 1266-1267.

59. Canada, Dominion Forest Service.
1961. Native trees of Canada. Can. Dep. Mines & Resources, Dominion Forest Serv. Bull. 61, ed. 6, 291 pp., illus. Ottawa, Ont.: Queen's Printer.

60. Carl, G. Clifford, Guiguet, C. J., and Hardy, George A.
1952. A natural history survey of the Manning Park area, British Columbia. Brit. Columbia Prov. Mus. Occas. Pap. 9, 130 pp., illus.

61. Carlsson, Blenda, Erdtman, H., Frank, A., and Harvey, W. E.
1952. The chemistry of the natural order Cupressales. VIII. Heartwood constituents of *Chamaecyparis nootkatensis*--carvacrol, nootkatin and chamic acid. Acta Chem. Scand. 6(5): 690-696.

A preliminary study of the steam-volatile constituents of the heartwood of *C. nootkatensis* has resulted in the isolation of carvacrol, the "sesquiterpene type" tropolone nootkatin, $C_{15}H_{20}O_2$, and a new acid, $C_{10}H_{14}O_2$, for which the name chamic acid is proposed. (Author's summary.)

62. Chittenden, F. J.
1931. Conifers in cultivation: the report of the conifer conference held by the Royal Horticultural Society. 634 pp., illus. London: Roy. Hort. Soc.

Contains a series of papers which include information on Alaska-cedar grown in Great Britain. Also lists statistics on notably large trees.

63. Clifford, N.
1957. Timber identification for the builder and architect. 141 pp., illus. London: Leonard Hill Ltd.

Describes briefly the color, characteristics, durability, and suitable uses of *Chamaecyparis nootkatensis* wood.

64. Coleman, Babette Brown, Muenscher, Walter C., and Charles, Donald R.
1956. A distributional study of the epiphytic plants of the Olympic Peninsula, Washington. Amer. Midland Natur. 56: 54-87.

The Hudsonian zone from 3,500- to 5,000-foot elevation is characterized by the Alaska-cedar, subalpine fir, mountain hemlock climax. Alaska-cedar is shown to be host to 17 species of lichens and two species of mosses.

65. Coleman, W.
1889. On conifers. J. Roy. Hort. Soc., London, 11: 320-339.

Describes horticultural uses and culture of many conifers, including Alaska-cedar.

66. Collingwood, G. H., and Brush, W. D.
1964. Knowing your trees. Rev. and ed. by Devereux Butcher. 349 pp., illus. Washington, D. C.: American Forestry Association.

67. Coltman-Rogers, Charles.
1920. Conifers and their characteristics. 333 pp., illus. London: John Murray, Albemarle St, W.

68. Cooke, Wm. Bridge.
1962. On the flora of the Cascade Mountains. Wasmann J. Biol. 20(1): 1-67.

69. Cooper, William S.
1942. Vegetation of the Prince William Sound region, Alaska; with a brief excursion into post-Pleistocene climatic history. Ecol. Monogr. 12: 1-22.

The author observed *Chamaecyparis nootkatensis* in the Prince William Sound region at its northwestern limit on Glacier Island, where it is locally abundant and thrifty. A resident fox farmer reported diameters up to 3 feet. The isolated occurrences in Prince William Sound area present an interesting phytogeographic problem, but the species is of no importance ecologically.

70. _____
1957. Vegetation of the Northwest-American province. Pacific Sci. Congr. Proc. 8(4): 133-138.

Alaska-cedar is listed as one of the 12 character trees of the province.

71. Courtot, Y., and Baillaud L.
1955. Sur la repartition des sexes chez un *Chamaecyparis*. (Sex Distribution in a *Chamaecyparis*) Annu. Sci. Univ. Besancon (Ser. 2, Bot.) 6: 75-81.

Examination of a branch of *C. nootkatensis* showed a definite sexual "spectrum," with the apex sterile, the female conelets borne on the intermediate portion of the branch, and the male on the oldest, basal part. (From authors' summary.)

72. Coville, Frederick Vernon, and Funston, Frederick.
1895. Botany of Yakutat Bay, Alaska, with a field report. Contrib. U.S. Nat. Herb. 3(6): 325-353.

One small tree was reported from Khantaak Island near the Indian village.

73. Crosby, David.
1965. Conditions of forest insects in forest regions, Alaska. *In* Forest insect conditions in the United States, 1964. U.S.D.A. Forest Serv., p. 37.

The cedar bark beetle, *Phloeosinus squamosus* Blkm., continued active over much of southeast Alaska, but the rather considerable tree killing was confined to stands of Alaska-cedar of low commercial value.

74. Dallimore, W., and Jackson, A. Bruce.
1923. A handbook of Coniferae including Ginkgoaceae. Ed. 3, 570 pp., illus. London: Edward Arnold & Co.

Includes a general description of the tree and wood, uses, silvical characteristics, list of varieties, and experience with the tree in Great Britain.

75. Davidson, J., and Abercrombie, I.
1927. Conifers, junipers, and yew: gymnosperms of British Columbia. 72 pp., illus. London: T. Fisher Unwin, Ltd.

76. Day, R. J.
1967. A plea for standard tree name abbreviations. Forest. Chron. 43: 121-134.

The author proposes a system for abbreviating tree names in the vernacular. Simple rules are set forth and a list of abbreviations presented. The following is proposed for *Chamaecyparis nootkatensis:* abbreviation--CHn; English vernacular--yellow cypress; French vernacular--Chamaecyparis jaune.

77. Dayton, William A.
1953. Geography of commercially important United States trees. J. Forest. 51: 276-279.

78. Dixon, Dorothy.
1961. These are the champs. Amer. Forests 67(1): 41-50.

The largest Alaska-cedar reported is located in the Olympic National Park, Washington. Circumference at 4-1/2 feet--21 feet; height--175 feet; spread--27 feet 5 inches.

79. Dodwell, Arthur, and Rixon, Theodore F.
1902. Forest conditions in the Olympic Forest Reserve, Washington. U.S. Geol. Surv. Prof. Pap. 7, Ser. H, Forest 4, 110 pp., illus.

Alaska-cedar is found on mountain ridges below 3,500 feet.

80. Doesburg, J. van.
1960. Stekproeven. (Trials with cuttings.) Jaarb. Proefsta. Boomkwek. Boskoop: 29-32. (In Dutch.)

Summarizes results of cutting trials for 1959 and 1960. Two varieties of *Chamaecyparis* were tested; var. *glauca* and var. *pendula*.

81. Downing, G. L.
1960. A cedar bark beetle outbreak, Petersburg Ranger District, North Tongass National Forest, October, 1960. U.S. Forest Serv., Alaska Forest Res. Center, Forest Insect Surv. Rep. 6, 2 pp.

An infestation of western redcedar and Alaska-cedar by *Phloeosinus squamosus* Blkm., a cedar bark beetle, was reported. The outbreak was confined to scrub cedar stands on poorly drained slopes and muskeg bottoms, on Kuiu Island, Alaska.

82. _____
1961. Conditions of forest insects in forest regions, Alaska. *In* Forest insect conditions in the United States, 1960. U.S.D.A. Forest Serv., p. 3.

A cedar bark beetle, *Phloeosinus squamosus* Blkm., was responsible for the death of large numbers of Alaska-cedar and western redcedar on Kuiu and Kupreanof Islands. The outbreak extends over several thousand acres and is confined primarily to scrub cedar stands.

83. Duff, S. R., and Erdtman, H.
1954. The chemistry of the natural order of Cupressales. X. Nootkatin. Chem. & Ind. 15: 432-433.

Presents chemical proof for the structure deduced from X-ray evidence for the tropolone nootkatin, $C_{15}H_{20}O_2$, from the heartwood of *Chamaecyparis nootkatensis*.

84. _____, Erdtman, H., and Harvey, W. E.
1954. The chemistry of the natural order Cupressales. XII. Heartwood constitutents of *Chamaecyparis nootkatensis* (Lamb.) Spach. Nootkatin. Acta Chem. Scand. 8(6): 1073-1082.

85. Dunn, Malcolm.
1892. The value in the British Islands of introduced conifers. J. Roy. Hort. Soc., London 14: 73-102.

Cupressus nootkatensis, or as it is perhaps better known, *Thuyopsis borealis*, is one of the hardiest and most beautiful of the cypresses, and appears to thrive everywhere in the British Isles. It is somewhat branchy for a timber tree, but when planted close, it forms a clean straight stem. The tallest tree recorded in Britain is at Murthyly: 50 feet high and 1 foot 9 inches girth. Dimensions of several other large trees are given.

86. Eades, H. W.
1932. British Columbia softwoods, their decays, and natural defects. Can. Dep. Int., Forest Serv. Bull. 80, 126 pp., illus.

87. Earl, Derek.
1958. Yellow cedar (*Chamaecyparis nootkatensis* (D. Don) Spach). Quart. J. Forest. 52(3): 204-207 plus 1 plate.

Discusses the silvics of Alaska-cedar in its natural range, particularly in British Columbia, with notes on its timber characteristics, and the history of the species in Britain.

88. Ebell, L. F., and Schmidt, R. L.
1964. Meteorological factors affecting conifer pollen dispersal on Vancouver Island. Can. Dep. Forest., Forest Res. Br. Pub. 1036, 28 pp., illus.

89. Ebell, Lorne F., and Schmidt, Ralph L.
1960. Effect of elevation and climatic factors on production and dispersal of coniferous-tree pollen. (Abstr.) Soc. Amer. Forest. Proc. 1959: 39.

In a test of daily and seasonal flowering during 1958 and 1959 on Vancouver Island, the following order of flowering among conifers was observed: *Tsuga heterophylla, Chamaecyparis nootkatensis, Pseudotsuga menziesii, Abies grandis, A. amabilis, Pinus contorta, P. monticola, A. lasiocarpa,* and *T. mertensiana.* Flowering began later with increasing elevation, but pollen production did not decrease with elevation.

90. Edlin, Herbert L.
1964. A modern "Sylva" or "A discourse of forest trees." Cypresses: conifers of the *Cupressus* and *Chamaecyparis* genera. Quart. J. Forest. 58(3): 208-217.

Nootka cypress appears well suited for growth in the colder districts of Great Britain, although it is little used as a plantation tree, possibly because of its slow rate of growth. This is a common feature of all trees from the Far North. The tree is described briefly. The intergeneric hybrid, Leyland cypress, is mentioned briefly. The largest tree at Leighton Hall, planted in 1911, is 82 feet tall and 8-1/2 feet in girth.

91. Eis, Slavoj.
1962. Statistical analysis of several methods for estimation of forest habitats and tree growth near Vancouver, B.C. Univ. Brit. Columbia Fac. Forest. Forest. Bull. 4, 76 pp., illus.

92. Eliot, Willard Ayres, and McLean, G. B.
1948. Forest trees of the Pacific coast. New ed., 565 pp., illus. New York: G. P. Putnam's Sons.

93. Enari, Leonid.
1956. Plants of the Pacific Northwest. 315 pp., illus. Portland, Oregon: Binfords & Mort.

94. England, R. F., and Stahl, E.
1963. Marine laminating properties of selected wood species: outdoor exposure--Alaska-cedar (*Chamaecyparis nootkatensis*), western larch (*Larix occidentalis*). Bureau Ships Index No. SR007-03-02, Ident. No. 37-1004-2, Prog. Rep. E-412-L3. Puget Sound Naval Shipyard, Bremerton, Wash. 5 pp.

Wood laminates of Alaska-cedar and western larch, adhesive bonded with three commercial phenol resorcinol formaldehyde adhesives, were exposure tested. Based on 18 months' outdoor exposure, it is concluded that laminates of Alaska-cedar and western larch made according to described specifications should be satisfactory for marine service use.

95. English, Edith Hardin.
1951. The flowering season on Mount Baker. Univ. Wash. Arboretum Bull. 14(3): 8-12.

Alaska-cedar occurs only occasionally on Mount Baker, associated with mountain hemlock and subalpine fir.

96. Erdtman, H.
1952. Chemistry of some heartwood constituents of conifers and their physiological and taxonomic significance. *In* Progress in organic chemistry, 1. J. W. Cook, ed., pp. 22-63. London: Butterworths Sci. Publ.

Alaska-cedar heartwood was found to contain at least one new tropolone derivative called nootkatin. The wood also contains carvacrol LII, a terpenoid phenol, formerly known among conifers only in the genus *Tetraclinis*.

97. _____ and Harvey W. E.
1952. The chemistry of the natural order Cupressales. IX. Nootkatin. Chem. & Ind. 71(52): 1267.

98. _____, Harvey, W. E., and Topliss, J. G.
1956. The chemistry of the natural order Cupressales. XVI. Heartwood constituents of *Chamaecyparis nootkatensis* (Lamb.) Spach. The structure of chamic and chaminic acids. Acta Chem. Scand. 10(9): 1381-1392.

Describes the structure of chamic and chaminic acids, derived from the heartwood of Alaska-cedar. Chaminic acid has been shown to be the optical antipode of isochamic acid.

99. _____ and Topliss, J. G.
1957. The chemistry of the natural order Cupressales. XVIII. Nootkatene, a new sesquiterpene type hydrocarbon from the heartwood of *Chamaecyparis nootkatensis* (Lamb.) Spach. Acta Chem. Scand. 11(7): 1157-1161.

A preliminary study of the neutral constituents gave terpenoid hydrocarbons, alcohols, compounds containing carbonyl, and carvocrol methyl ether. Nootkatene was isolated in an apparently pure state. (From author's summary.)

100. Erdtman, Holger, and Hirose, Yoshiyuki.
1962. The chemistry of the natural order Cupressales. 46. The structure of nootkatone. Acta Chem. Scand. 16(6): 1311-1314.

Nootkatone, a new eudalenoid sesquiterpene ketone, was isolated from heartwood of *Chamaecyparis nootkatensis*.

101. Fitzpatric, H. M.
1965. Conifers: keys to the genera and species, with economic notes. Roy. Dublin Soc. Sci. Proc. 2(7): 67-129 plus 10 plates.

Presents a comprehensive description of the conifers, based on foliage morphology, in the form of an artificial key. Eighteen species of *Cupressus* and *Chamaecyparis* are listed, including Alaska-cedar.

102. Fonda, R. W.
1966. Ecology of montane and subalpine forests in Olympic National Park. Ecol. Soc. Amer. Bull. 47(3): 140.

103. Forest Products Laboratories Division (Canada).
1951. Canadian woods; their properties and uses. Ed.2, 367 pp., illus. Ottawa: King's Printer.

Tabulations of physical and mechanical properties are included in the appendix.

104. Forest Products Research (London).
1957. A handbook of softwoods. Dep. Sci., Ind. Res., 73 pp. London: Stationery Off.

105. Fowells, H. A.
1965. Silvics of forest trees of the United States. U.S. Dep. Agr. Handb. 271, 762 pp., illus.

Contains a revision of silvical characteristics of Alaska-cedar (Andersen, H. E., 1959).

106. Franklin, Jerry F.
1961. A guide to seedling identification for 25 conifers of the Pacific Northwest. U.S. Forest Serv. Pacific Northwest Forest & Range Exp. Sta., 65 pp., illus.

An illustrated key to seedling identification. *Chamaecyparis nootkatensis* seedlings have two (rarely three) cotyledons, flat in cross section, less than 12 mm. long; juvenile needles not glaucous.

107. _____
1965. Tentative ecological provinces within the true fir-hemlock forest areas of the Pacific Northwest. Pacific Northwest Forest & Range Exp. Sta., U.S.D.A. Forest Serv. Res. Pap. PNW-22, 31 pp., illus.

108. _____ and Mitchell, Russel G.
1967. Successional status of subalpine fir in the Cascade Range. Pacific Northwest Forest & Range Exp. Sta., U.S.D.A. Forest Serv. Res. Pap. PNW-46, 16 pp., illus.

109. _____ and Trappe, James M.
1963. Plant communities of the northern Cascade Range: a reconnaissance. Northwest Sci. 37: 163-164.

Alaska-cedar may be a component of avalanche communities maintained as topographic climaxes.

110. Frost, F.
1951. Forsok med sneskjermplantninger pa Saltjellet. (Investigations on planting snowbreaks on Saltfjell) Tidsskr. Skogbr. 59(6): 176-185. (In Norwegian.)

Discusses the planting of snowbreaks along the railroad across Saltfjell, north of the Arctic Circle, reaching an altitude of 680 m.

111. Garman, E. H.
1953. Pocket guide to the trees and shrubs of British Columbia. Ed. 2, Brit. Columbia Forest Serv. Bull. 28, 102 pp., illus.

112. Gass, Charles R., Billings, Richard F., Stephens, Freeman R., and others.
1967. Soil management report for the Hollis area. U.S. Forest Serv., Tongass National Forest, Alaska Region. 118 pp., illus.

Describes soils and vegetation on a portion of Prince of Wales Island, Alaska. Alaska-cedar occurs from sea level to about 1,500 feet, and occurs on the following soils series: Maybeso, McGilvery, St. Nicholas, and Wadleigh.

113. Gorman, M. W.
1907. Vegetation of the northeast slope of Mount Baker. Mazama 3(1): 31-48.

Alaska-cedar was seen above 4,000 feet, but was observed only about Slate Mountain. Only small trees were seen, some of these bearing fertile cones. Dead trees, up to 20 inches in diameter, were remnants of a stand previously destroyed by fire.

114. _____
1920. The flora of Mount Hood. Oreg. Out-of-Doors 1(1): 64-96.

Alaska-cedar, formerly thought to reach its southern limit here, is now known to be fairly common on Mount Jefferson and Whiskey Peak (Josephine County) 3 miles from the California border. On Mount Hood, Alaska-cedar is found on moist slopes on the south and west sides up to 4,000 feet.

115. Gorman, Martin W.
1899. Eastern part of Washington Forest Reserve. U.S. Geol. Surv. 19th Annu. Rep., 1897-98, Part 5, Forest Reserves: 315-350, illus.

Within the region described, Alaska-cedar is found only in moist ravines or canyons that head in or about the main divide of the Cascade Range. Its altitudinal range is from 2,100 feet on the Stehekin to 6,000 feet about the headwaters of the Methow River and Rattlesnake Creek. Finest specimens range from 50 to 75 feet in height and 10 to 25 inches in diameter. At its upper limits the tree is stunted, with an alpine appearance.

116. _____
1929. New stations for trees in Oregon. Madrono 1: 275.

The author collected a specimen of Alaska-cedar from Whiskey Peak, Josephine County, Oregon, 3 miles from the California border.

117. Grant, John A., and Grant, Carol L.
1943. Trees and shrubs for Pacific Northwest gardens. 335 pp., illus. Seattle: Frank McCaffrey, Dogwood Press.

118. Greaves, C., and Schwartz, H.
1951. The chemical utilization of wood. *In* Canadian woods; their properties and uses. Ed. 2, pp. 209-234, illus. Ottawa: King's Printer.

Analysis of wood is tabulated (mean values obtained in percentage of ovendry wood).

119. Green, George Rex.
1933. Trees of North America (exclusive of Mexico). Vol. 1, The conifers. 186 pp. Ann Arbor: Edward Bros., Inc.

A concise description of Alaska-cedar, including silvics, morphology, and uses.

120. Greguss, Pál.
1955. Identification of living gymnosperms on the basis of xylotomy. Akadémiai Kiadó, Budapest. 263 pp. (plus 350 plates & 8 summary key sheets in pocket). (In German.)

Provides anatomical key and illustration of Alaska-cedar.

121. Greig, E. J.
1964. Some notes on the mountain flora of Vancouver Island. Univ. Wash. Arboretum Bull. 27: 98-99, 112-113.

Alaska-cedar is a component of the Hudsonian zone near timberline at 5,000 feet and one of the dominant trees where the transition zone merges into the Canadian zone at 4,000 feet.

122. Gripenberg, Jarl.
1953. The constituents of the heartwood of the genus *Thuja* and some related genera. J. Sci. Ind. Res., India 12A(5): 233-237.

Reviews information on the constituents of *Thuja plicat f. occidentalis*, *Chamaecyparis obtusa*, *C. nootkatensis* and *Thujopsis dolabrata*.

123. Guiguet, C. J.
1953. An ecological study of Goose Island, British Columbia, with special reference to mammals and birds. Brit. Columbia Provisional Mus. Occas. Pap. 10, 78 pp., illus.

On Goose Island, two plant associations are included in the general heading of coniferous forest; the typical coast climax association of western redcedar, western hemlock, and Sitka spruce, and an association which includes western redcedar, western hemlock in association with lodgepole pine, Alaska-cedar, and Pacific yew. The latter is a stunted forest forming an ecotone between spruce, hemlock, and muskeg associations, and also predominates in rocky areas. Floral composition is described by the Aldous method.

124. Hagem, Oscar.
1931. Forsok med Vestamerikanske Traeslag. (Studies on Western American tree species.) Medd. Forstl. Forsokssta. 12. 4(2): 1-127 plus 4 maps.

Describes Alaska-cedar provenance trials in Norway from Alaska, British Columbia, Washington, and California.

125. Hale, J. D.
1951. The structure of wood. *In* Canadian woods; their properties and uses. Ed. 2, pp. 57-104, illus. Ottawa: King's Printer.

Contains a key to the identification of woods commonly used in Canada.

126. Halliday, W. E. D.
1937. A forest classification for Canada. Dep. Mines, Resources, Can. Forest Serv. Bull. 89, 50 pp. plus map.

Alaska-cedar is a component of the coast forest region. Amabilis fir and Alaska-cedar occur generally, their ability to stand drier conditions being shown by their presence toward the upper limits of tree growth.

127. Hanan, A. M. S.
1967. Species trials and silvicultural control of mixed species. Dep. Lands, Ireland. Forest Div. Forest Res. Rev. 1957/64: 43-59.

Describes trials of *Cupressocyparis leylandii*, which so far has proved to be a vigorous, reasonably hardy tree.

128. Hansen, Carl.
1892. Pinetum Danicum. Conifers collected and observed by Professor Carl Hansen, Mynstersvei 2, Copenhagen V. J. Roy. Hort. Soc. 14: 257-480.

"Mr. Menzies was the first discoverer of this species. He obtained specimens from Nootka Sound, when Vancouver (with whom he sailed as surgeon and naturalist) stopped there in his celebrated voyage round the world; and from his specimens Lambert described it in his "Genus Pinus." It was introduced from the Botanic Garden of St. Petersburg into Europe, under the name of *Thuyopsis borealis*, about 1850, and is now plentifully distributed. Mr. R. Brown, who collected for the Edinburg "British Columbia Botanical Association" in one of his letters . . . says "Next morning looking about our neighborhood, we re-entered our canoe, hollowed out of *Cupressus nutkaensis*, the mats we sat upon being made of the fibre of the same tree, ropes of the same material, and occasionally of *Thuya plicata*." Notes on habits and habitat are given. The tree was introduced in Denmark in 1870.

129. Hansen, Henry P.
1950. Pollen analysis of three bogs on Vancouver Island, Canada. J. Ecol. 38: 270-276.

130. Hanzlik, E. J.
1925. A site classification scheme for the western Cascades forest region. Univ. Wash. Forest. Club Quart. 4(1): 5-8.

Alaska-cedar is a component of sites IV and V. Generally these sites are from 2,500 feet to 4,500 feet in northern Washington and from 3,500 to 4,000 feet in Oregon. Site IV associates are western hemlock, Pacific silver fir, noble fir, and mountain hemlock. Site V associates are Pacific silver fir, mountain hemlock, and subalpine fir.

131. Hanzlik, Edward John.
1928. Trees and forests of western United States. 128 pp. Portland, Oregon: Dunham Printing Co.

132. Hard, J. S.
1967. Identification of destructive Alaska forest insects. U.S.D.A. Forest Serv., Pacific Northwest Forest & Range Exp. Sta., 19 pp., illus.

133. Harlow, William M., and Harrar, Elwood S.
1950. Textbook of dendrology. Ed. 3, 555 pp., illus. New York: McGraw-Hill Book Co.

134. Harrar, E. S.
1957. Hough's encyclopaedia of American woods. 204 pp., illus. New York: Robert Speller & Sons.

Briefly describes the discovery, uses, habits, and morphology of the tree, diagnostic features of the wood, and its microscopic anatomical features. Physical and mechanical properties are tabulated.

135. Harris, A. S.
1962. Cone crops in coastal Alaska--1960 and 1961. U.S.D.A. Forest Serv. North. Forest Exp. Sta. Tech. Note 53, 4 pp.

A report for Alaska-cedar indicated a "medium" crop of both 1- and 2-year cones near Petersburg (Alaska). The only report from the Sitka District showed a crop failure.

136. Hazard, John W.
1963. Forest statistics for Chelan and Douglas counties, Washington, 1959-60. Pacific Northwest Forest & Range Exp. Sta. U.S.D.A. Forest Serv. Resource Bull. PNW-5, 26 pp.

Forest statistics for Chelan and Douglas Counties are given as of 1959-60. On commercial forest land, the volume of Alaska-cedar growing stock 5.0 inches d.b.h. and larger was 3 million cubic feet. Volume of Alaska-cedar sawtimber 11.0 inches d.b.h. and larger was 10 million board feet (Scribner).

137. _____
1965. Timber resource statistics for southwest Washington. Pacific Northwest Forest & Range Exp. Sta. U.S.D.A. Forest Serv. Resource Bull. PNW-15, 32 pp.

Forest statistics for southwest Washington, which includes Clark, Cowlitz, Lewis, Pacific, Skamania, and Wahkiakum counties, are given as of January 1, 1964. On commercial forest land, the volume of Alaska-cedar growing stock 5.0 inches d.b.h. and larger was 24 million cubic feet. Volume of Alaska-cedar sawtimber 11.0 inches d.b.h. and larger was 120 million board feet (Scribner).

138. _____ and Metcalf, Melvin E.
1965. Forest statistics for west central Oregon. Pacific Northwest Forest & Range Exp. Sta. U.S.D.A. Forest Serv. Resource Bull. PNW-10, 35 pp.

Forest statistics for west-central Oregon, which includes Benton, Lane, Lincoln, and Linn Counties, are given as of 1963. On commercial forest land, the volume of Alaska-cedar growing stock 5.0 inches d.b.h. and larger was 3 million cubic feet. Volume of Alaska-cedar sawtimber 11.0 inches d.b.h. and larger was 7 million board feet (Scribner).

139. Hegnauer, R.
1962. Chemotaxonomie der Pflanzen. Eine Ubersicht uber die Verbreitung und die systematische Bedeutung der Pflanzenstoffe. (Chemotaxonomy of plants. A survey of the distribution and systematic significance of plant constituents.) Thallophytes, Bryophytes, Pteridophytes and Gymnosperms. Vol. I. 517 pp. illus. Birkhauser Verlag: Basel-Stuttgart. (In German.)

140. Henry, J. K.
1915. Flora of southern British Columbia and Vancouver Island: with many references to Alaska and northern species. 363 pp. Toronto: W. J. Gage & Co., Ltd.

141. Heusser, C. J.
1960. Late-Pleistocene environments of north Pacific North America. Amer. Geogr. Soc., Spec. Pub. 35, 308 pp., illus.

Describes the distribution, habitat, and plant associates of Alaska-cedar throughout its range.

142. Heusser, Calvin J.
1964. Palynology of four bog sections from the western Olympic Peninsula, Washington. Ecology 45: 23-40, illus.

143. _____
1965. A Pleistocene phytogeographical sketch of the Pacific Northwest and Alaska. *In* The quaternary of the United States. H. E. Wright, Jr., and David G. Frey, eds. pp. 469-483, illus. Princeton, N. J.: Princeton Univ. Press.

144. Hibberson, R. W.
1921. Yellow cedar in British Columbia. The Timberman 22(12): 138.

A brief description of Alaska-cedar in British Columbia.

145. Higinbotham, N., and Higinbotham, Betty Wilson.
1954. Quantitative relationships of terrestrial mosses with some coniferous forest at Mount Rainier National Park. Butler Univ. Bot. Stud. 11: 149-168.

Characterizes the terrestrial plant communities of typical climax stands. Above the *Abies amabilis-Tsuga mertensiana* forest, *T. mertensiana* and *C. nootkatensis* assume dominance, generally at elevations between 4,000 to 5,000 feet. The plant community is described.

146. Hiorth, G.
1956. Allverdens traer i norsk jord. (Trees of the world on Norwegian soil.) 245 pp. S. Bern. Hegland-Flekkefjord: Tryktog Bundet Hos. (In Norwegian.)

147. Hoffman, B. E.
1913. Alaska woods, their present and prospective uses. Forest Quart. 11(2): 185-200.

Uses and characteristics of Alaska-cedar.

148. Holubcik, M.
1960. Prispevok kotazke pestovania cudzokrajnych drevin v nasich porastoch. (Raising exotics in Czechoslovak stands) Lesn. Cas. 6(1): 64-75 (In Slovak.)

Discusses briefly experience with and possibilities for 14 conifers including *Chamaecyparis nootkatensis* and a few broad-leaved species.

149. Howell, Thomas.
1903. A flora of Northwest America. Vol. 1, Phanerogamae. 792 pp. Portland, Oregon.

150. Hulten, E.
1937. Outline of the history of arctic and boreal biota during the Quaternary period; their evolution during and after the Glacial period as indicated by the equiformal progressive areas of present plant species. 168 pp. plus 43 plates. Stockholm: Bokforlags Aktiebolaget Thule.

151. _____
1941. Flora of Alaska and Yukon I. Botanical Museum, Lunds Univ. Arsskr., N. F., Avd. 2, 37(1): 1-127.

152. Huntington, LeRoy W.
1923. Forest aspects of Alaska. Univ. Wash. Forest Club Quart. 1(4): 15-26.

Describes forest conditions in Alaska. Minimum stumpage rate for Alaska-cedar on the Tongass Forest is $1.50 per thousand board feet. A few Alaska-cedar logs have been shipped to Japan but receipts did not justify continuing export.

153. Hutchinson, Ian.
1958. Some aspects of logging in the coast forest of British Columbia. I. Empire Forest. Rev. 37(1): 66-84.

As of 1955, the inventory of mature Alaska-cedar in mature stands was 1,560,123 cubic feet. Annual cut of Alaska-cedar for all timber products was 3,336 cubic feet.

154. Hutchison, O. Keith.
1967. Alaska's forest resource. Pacific Northwest Forest & Range Exp. Sta. U.S.D.A. Forest Serv. Resource Bull. PNW-119, 74 pp., illus.

In Alaska the volume of Alaska-cedar and western redcedar is about 4 billion board feet each. There is no active market for either species today. A photo of a tree 4 feet in diameter is shown on page 46.

155. Institute of Forest Products.
1957. Conversion factors for Pacific Northwest forest products. Univ. Wash. Dep. Conserv., 28 pp.

156. Jackson, A. Bruce, and Dallimore, W.
1926. A new hybrid conifer. Roy. Bot. Gardens, Misc. Inform. Bull. Kew. 3: 113-115.

Describes the occurrence of a chance hybrid between yellow cedar and Monterey cypress. Authors propose to name it *Cupressus leylandii*.

157. Jaeger, Edmund C.
1962. A source book of biological names and terms. Ed. 3, 323 pp., illus. Springfield, Ill: Charles C. Thomas.

Chamae- (Greek) in botany sometimes signifies false.

Cyparis- (Greek) Kyparissos means cypress. Hence, the generic name *Chamaecyparis*, or false cypress.

158. Jepson, W. L.
1910. The silva of California. Vol. 2. 480 pp., illus. Berkeley:. Calif. Univ. Mem.

159. Jepson, Willis Linn.
1933. Phytogeography of the coniferae of western North America. Fifth Pacific Sci. Congr. Proc., pp. 3255-3264.

160. Jones, George Neville.
1936. A botanical survey of the Olympic Peninsula, Washington. Univ. Wash. Biol. Pub. 5, 286 pp., illus.

161. _____
1938. The flowering plants and ferns of Mount Rainier. Univ. Wash. Biol. Pub. 7, 192 pp., 9 plates.

162. Kelsey, Harlan P., and Dayton, William A.
1942. Standardized plant names. Ed. 2 (rev. and enl.), 675 pp. Harrisburg, Pa.: McFarland Co.

Approved common name is nootka falsecypress. The following clons are recognized: blue (*glauca*), compact (*compacta*), Sanders (*sanderi*), silver (*argenteovariegata*), weeping (*pendula*), and yellow leaf (*lutea*).

163. Kennedy, Elma I.
1965. Strength and related properties of woods grown in Canada. Can. Forest Prod. Res. Br. Dep. Forest. Pub. 1103, 51 pp.

164. Klein, David R.
1965. Ecology of deer range in Alaska. Ecol. Monogr. 35: 259-284.

On both Woronkofski and Coronation Islands, Alaska, Alaska-cedar is often present as a subordinant tree in the overmature stands; but in blowdown areas and muskeg edges on Coronation Island and in an old burn on Woronkofski Island, it is frequently a dominant species or codominant with hemlock and spruce. In open scrub forests on poorly drained sites, lodgepole pine is usually the dominant tree form although it is frequently replaced by Alaska-cedar on Coronation Island. Trees are dwarfed, commonly not over 20-30 feet in height, and widely spaced.

165. Koehler, A.
1949. Key for identification of woods without the aid of a hand lens or microscope. U.S. Dep. Agr. Yearbook 1949: 833-839.

166. Krajina, V. J. (ed.)
1963. 1962 progress report National Research Council grant No. T-92. Ecology of the forests of the Pacific Northwest. Univ. Brit. Columbia, Dep. Biol. & Bot., 105 pp.

167. _____
1964. 1963 progress report National Research Council grant No. T-92. Ecology of the forests of the Pacific Northwest. Univ. Brit. Columbia, Dep. Biol. & Bot., 94 pp.

168. _____
1965. Ecology of western North America. Vol. 1. Univ. Brit. Columbia, Dep. Bot., 112 pp.

169. _____
1965. 1964 progress report National Research Council grant No. T-92. Ecology of the Pacific Northwest and of western Canadian arctic and subarctic. Univ. Brit. Columbia, Dep. Biol. & Bot. 18 pp.

170. _____
1965. Biogeoclimatic zones and classification of British Columbia. *In* Ecology of western North America. Vol. 1. Univ. Brit. Columbia, Dep. Bot., pp. 1-17.

Coniferous trees growing in the Pacific Northwest are listed by lower and subalpine altitudes according to their increasing shade tolerance. In subalpine altitudes, *Chamaecyparis nootkatensis*, along with *Tsuga mertensiana* and *Abies amabilis*, are listed in seventh and last place, being most shade tolerant. British Columbia is divided into seven biogeoclimatic regions (formations) and several zones. Alaska-cedar is one of the plant indicator species present in the Pacific coastal subalpine forest region in the mountain hemlock zone.

171. _____
1966. 1966 progress report National Research Council grant No. A-92. Ecology of the Pacific Northwest and of western Canadian arctic and subarctic. Univ. Brit. Columbia, Dep. Bot., 41 pp.

172. Krajina, Vladimir J.
1959. Bioclimatic zones in British Columbia. Univ. Brit. Columbia Bot. Ser. 1, 47 pp.

173. Krause, A.
1956. The Tlingit Indians: Results of a trip to the northwest coast of America and Bering Straits. (Trans. by E. Gunther) 272 pp., illus. Seattle: Univ. Wash. Press. (Originally published as, Die Tlinkit-Indianer, Jena, 1885.)

Alaska-cedar, found singly near Sitka, has a splendid wood for carving. The strong, aromatic odor is supposed to be protection against moths and other harmful insects. For this quality, it was highly prized in China where it was formerly imported and made into trunks under the name of camphor wood by the Chinese. The ship worm, the teredo, is supposed to not touch cedar. Uses of the tree by the Tlingit Indians are also described.

174. Kriz, Zdenek.
1960. Rod *Thuja* L. a *Chamaecyparis* Spach v Krajskem arboretu v Novem Dvore u Opavy. (The genera *Thuja* and *Chamaecyparis* in the Novem Dvore arboretum near Opava.) Acta Dendrologica Cechoslovaca, Opava No. 2, 1959/60: 253, 267-269. (In Slovak.)

Notes on 16 forms of *Thuja* and 18 species and forms of *Chamaecyparis*.

175. Kurth, E. F.
1950. The chemical analysis of western woods. Part III. TAPPI 33(10): 507-508.

Four species of western hardwoods and four species of western softwoods, including *Chamaecyparis nootkatensis*, were analyzed for ether, alcohol, water extractives, holocellulose, lignin, methoxyl group, acetyl group, and ash content.

176. Langille, H. D., Plummer, Fred G., Dodwell, Arthur, Rixon, Theodore F., and others.
1903. Forest conditions in the Cascade Range Forest Reserve, Oregon. U.S. Geol. Surv. Prof. Pap. 9, Ser. H, Forest. 6. 298 pp., illus.

Forest conditions in the Cascade Range Forest Reserve are described by township. Alaska-cedar was found in 14 townships within the reserve, but only in two were the trees large and numerous enough to be included in timber estimates. Mature trees are 1.5 feet in diameter and 45 feet high, with 12 feet of clear trunk.

177. Liddicoet, A. R., and Righter, F. I.
1960. Trees of the Eddy Arboretum. U.S.D.A. Forest Serv., Pacific Southwest Forest & Range Exp. Sta. Misc. Pap. 43, 41 pp., illus.

178. Little, Elbert L., Jr.
1949. To know the trees; important forest trees of the United States. U.S. Dep. Agr. Yearbook 1949: 763-814.

179. _____
1953. Check list of native and naturalized trees of the United States (including Alaska). U.S. Dep. Agr. Handb. 41, 472 pp.

180. Lucas, Colin Cameron.
1926. The essential oil content of the *Chamaecyparis nootkatensis*. Master's thesis, Univ. Brit. Columbia, 49 pp.

181. Lyons, C. P.
1956. Trees, shrubs and flowers to know in Washington. 211 pp., illus. Toronto, Vancouver: J. M. Dent & Sons, Ltd.

182. MacDonald, J.
1952. The place of northwestern American conifers in British forestry. Forest. Comm., London. 21 pp. (6th Brit. Commonwealth Forest. Conf., Can. 1952).

Alaska-cedar has not been planted extensively as a forest tree in Britain, because its growth is slow and it often forks very badly. However, it hybridizes with *Cupressus macrocarpa*, to produce *Cupressocyparis leylandii*. This hybrid is apparently more frost resistant than either of its parents and shows remarkable vigor.

183. MacDonald, James, Wood, R. F., Edwards, M. V., and Aldhous, J. R.
1957. Exotic forest trees in Great Britain. Brit. Forest. Comm. Bull. 30, 167 pp., illus.

The Nootka cypress, discovered by Archibald Menzies in 1793 and introduced into Great Britain in 1853, has been planted as a specimen tree and ornamental in most parts of Britain and has succeeded. A number of examples are given. The tree does not seem to be greatly affected by late spring frosts and is able to withstand exposure. However, it is slow growing and is damaged by deer. The seeds require stratification for up to a year before sowing.

184. MacMillan, Bloedel, and Powell River Limited.
[n. d.] Characteristics and uses of yellow cedar. 9 pp. plus tables. Vancouver, Brit. Columbia

185. Markwàrdt, L. J.
1930. Comparative strength properties of woods grown in the United States. U.S. Dep. Agr. Tech. Bull. 158, 38 pp.

Tables include data on specific gravity, shrinkage, and composite strength values of many hardwoods and softwoods, including Alaska-cedar.

186. _____
1930. Aircraft woods: their properties, selection, and characteristics. U.S.D.A. Forest Serv., Forest Prod. Lab., Nat. Adv. Comm. Aeron. Rep. 354, 34 pp.

Strength of various woods for aircraft design is given, and factors affecting these values are discussed. Alaska-cedar may be considered with red, white, and Sitka spruce for use in highly stressed parts, such as wing beams.

187. _____
1931. The distribution and the mechanical properties of Alaska woods. U.S. Dep. Agr. Tech. Bull. 226, 80 pp., illus.

Gives information of the range, distribution, supply, properties, and uses of Alaska-cedar, and a general description of the tree. The total stand is estimated to be about 10 billion board feet, with about 2.5 billion board feet in Alaska.

188. _____
1941. Aircraft woods: Their properties, selection, and characteristics. U.S. Dep. Agr. Forest Prod. Lab. Rep. 1079, 51 pp. (Reprint, Nat. Adv. Comm. Aeron. Rep. 354.)

Describes the important characteristics of many woods for aircraft construction, including Alaska-cedar. Alaska-cedar is not likely to be considered for use in aircraft because of its limited supply. It may serve as a species supplementary to spruce in some applications, the result being somewhat greater strength at the expense of increased weight.

189. _____ and Wilson, T. R. C.
1935. Strength and related properties of woods grown in the United States. U.S. Dep. Agr. Tech. Bull. 479, 99 pp.

Lists mechanical properties of Alaska-cedar.

190. Mason, Herbert L.
1941. The Alaska-cedar in California. Madrono 6: 90-91.

Alaska-cedar was collected in 1939 on the northeast slope of Mount Emily in northwestern Siskiyou County, and was reported seen on Little Grayback, farther to the west. Both localities are a little over 2 miles from the Oregon border. Specimens of the Mount Emily material are deposited in the herbarium at Rancho Santa Ana Botanic Garden, Anaheim, California. Trees associated with Alaska-cedar were *Abies shastensis, Picea breweriana, Pinus monticola, Libocedrus decurrens,* and *Taxus brevifolia.*

191. Mayr, Heinrich.
1890. Die Waldungen von Nordamerika ihre Holzarten, deren Anbaufahigkeit und forstlicher Werth fur Europa im Allgemeinen und Deutschland insbensonder. (The forests of North America, their tree species, their cultivation possibilities, and general forest values for Europe.) 448 pp., illus. Munchen: University Buchhandlung. (In German.)

192. McAvoy, Blanche.
1931. Ecological survey of the Bella Coola region. Bot. Gaz. 92: 141-171.

Alaska-cedar was found at only one location in the region (on a mountain along the north border at the west end of the valley).

193. McElhanney, T. A.
1951. Commercial timbers of Canada. *In* Canadian woods; their properties and uses. pp. 23-56. Ottawa: King's Printer.

194. McGugan, B. M.
1958. Forest lepidoptera of Canada, recorded by the forest insect survey. Vol. 1, Papilionidae to Arctiidae. Can. Dep. Agr., Forest Biol. Div. Pub. 1034, 76 pp., illus.

195. McMinn, Howard E., and Maino, Evelyn.
1951. An illustrated manual of Pacific coast trees. 409 pp., illus. Berkeley, Los Angeles: Univ. Press.

196. Mertie, J. B.
1931. Notes on the geography and geology of Lituya Bay, Alaska. U.S. Geol. Surv. Bull. 836-B: 117-135.

Alaska-cedar averaging 3 feet in diameter is reported growing on benches.

197. Metcalf, Melvin E., and Hazard, John W.
1964. Forest statistics for northwest Oregon. Pacific Northwest Forest & Range Exp. Sta. U.S.D.A. Forest Serv. Resource Bull. PNW-7, 38 pp.

Forest statistics are given for the following counties: Clackamas, Clatsop, Columbia, Hood River, Marion, Multnomah, Polk, Tillamook, Washington, and Yamhill. On commercial forest land, the volume of Alaska-cedar growing stock 5.0 inches d.b.h. and larger was 5 million cubic feet. Volume of Alaska-cedar sawtimber 11.0 inches d.b.h. and larger was 10 million board feet (Scribner).

198. Molnar, A. C., Harris, J. W. E., and Ross, D. A.
1965. British Columbia region. Can. Dep. Forest., Forest Insect Dis. Surv., pp. 93-109, illus. Ottawa.

199. Morton, B. R., and Lewis, R. G.
1917. Native trees of Canada. Can. Dep. Int. Forest. Br. Bull. 61, 233 pp., illus.

Gives range and description of Alaska-cedar in Canada.

200. Muenscher, W. C.
1941. The flora of Whatcom County, State of Washington; vascular plants. 139 pp. Ithaca, New York: William A. Church Co.

A catalog of plant collections made by the author. Lists seven locations where specimens of Alaska-cedar were collected. In Whatcom County, Alaska-cedar is locally common in cool, moist mountain valleys, sometimes forming clumps of trees in alpine meadows.

201. Muir, John.
1915. Travels in Alaska. 327 pp., illus. Boston and New York: Houghton Mifflin Co.

202. Mulholland, F. D.
1937. The forest resources of British Columbia. Dep. Lands, B.C. Forest Serv., 153 pp., illus. Victoria.

Total merchantable timber and accessible merchantable timber by forest district is given. Alaska-cedar volume is shown in the Vancouver and Prince Rupert district. Total merchantable volume is 3,019,200,000 board feet, of which 1,398,300,000 board feet is accessible.

203. Munday, Don.
1931. Ancients of the sky lines. Can. Forest. & Outdoors 27(11): 25-27, illus.

A general discourse on Alaska-cedar, its appearance, habitat, growth rate, stature, and longevity. The largest trees seen by the writer were 19-1/2 and 20-1/2 feet in circumference and were estimated to be at least 3,500 years old.

204. Munns, E. N.
1938. The distribution of important forest trees of the United States. U.S. Dep. Agr. Misc. Pub. 287, 176 pp., illus.

Contains a range map of Alaska-cedar on page 60.

205. Newlin, J. A., and Wilson, Thomas R. C.
1917. Mechanical properties of woods grown in the United States. U.S. Dep. Agr. Bull. 556, 28 pp., illus.

206. Norin, Torbjorn.
1964. Chanootin, a bicyclic C_{15}-tropolone from the heartwood of *Chamaecyparis nootkatensis* (Lamb.) Spach. Arkiv För. Kem. 22(2): 129-135.

A new C_{15}-tropolone, $C_{15}H_{18}O_3$, has been isolated from the heartwood of *Chamaecyparis nootkatensis*, for which the name chanootin is proposed.

207. _____
1964. The chemistry of the natural order Cupressales. 50. The absolute configurations of chamic, chaminic, and isochamic acids. Arkiv För. Kem. 22(10): 123-128.

Describes the absolute configuration of three chemical substances found in the heartwood of Alaska-cedar.

208. Orloci, Laszlo.
1961. Forest types of the western hemlock zone. M. Sci. thesis, Dep. Biol. & Bot., Univ. Brit. Columbia. 206 pp., illus.

Author presents an ecosystem classification of the forest stands of the coastal western hemlock zone. Alaska-cedar is shown to be an inhabitant of the dry edaphic and mesic zonal forest types of the wet and cool subzone. Alaska-cedar is included in a number of forest types.

209. _____
1963. Indicator plants in the coastal western hemlock zone. *In* 1962 progress report "Ecology of the forests of the Pacific Northwest," V. J. Krajina, ed. pp. 25-34, illus. Univ. Brit. Columbia, Dep. Biol. & Bot.

210. _____
1964. Vegetational and environmental variations in the ecosystems of the coastal western hemlock zone. Ph. D. thesis, Univ. Brit. Columbia, Dep. Biol. & Bot. 204 pp., illus.

211. _____
1965. The coastal western hemlock zone on the southwestern British Columbia mainland: Vegetation-environmental patterns and ecosystem classification. *In* Ecology of western North America, vol. 1. V. J. Krajina, ed. pp. 18-34. Univ. Brit. Columbia, Dep. Bot.

Alaska-cedar is tabulated with its plant associates in the Gaultherieto-Tsugetum heterophyllae association under two ecosystem types; Orthic Vaccinium-Gaultheria type, and Lithosolic Vaccinium-Gaultheria type. Characteristic landform, slope, altitude, and soil characteristics of the habitats are tabulated. Associated tree species on both types are: *Tsuga heterophylla, Thuja plicata, Pseudotsuga menziesii,* and *Pinus monticola.*

212. Osborn, A.
1941. An interesting hybrid conifer: *Cupressocyparis leylandii.* J. Roy. Hort. Soc. 66: 54-55.

Describes natural hybrid between *Cupressus macrocarpa* and *Chamaecyparis nootkatensis.* In the great frost of January 1940 it proved much hardier than *C. macrocarpa.* It is easy to propagate from cuttings, and has been raised from seed.

213. Osgood, Wilfred H.
1901. Natural history of the Queen Charlotte Islands, British Columbia. Natural history of the Cook Inlet Region, Alaska. U.S. Dep. Agr. N. Amer. Fauna 21: 87 pp., illus.

214. Palmer, L. J.
1942. Major vegetative types of southeastern Alaska. U.S. Fish & Wildlife Serv., 16 pp. (Mimeogr.)

215. Paul, B. H.
1961. Choose the right wood. Properties and uses of some minor western softwoods. Hitchcock's Woodworking Dig. 63(10): 26-27.

Tabulates and briefly discusses the sources, supply, physical and mechanical properties, and uses, of Alaska-cedar and several other western conifers.

216. Paul, Benson H.
1959. The effect of environmental factors on wood quality. U.S.D.A. Forest Serv., Forest Prod. Lab. Rep. 2170, 48 pp.

The western cedars, including Alaska-cedar, commonly have highly durable heartwood. Alaska-cedar has a specific gravity of 0.42, higher than other cedars, with growth rates generally 10 and mostly around 20 rings per inch. This slow growth is desirable for certain specialty uses which require uniform structure.

217. Peakes, L. V., Jr., Lloyd, R. A., Barnes, V. S., Berry, J. H., and Ritter, G. J.
1945. Substitute woods for Port-Orford white-cedar for storage battery separators. U.S.D.A. Forest Serv., Forest Prod. Lab. Rep. R1476, 16 pp., illus.

After treatment, Alaska-cedar wood was found to be suitable for use as battery separators. Tests and treatments are described.

218. Peattie, Donald Culross.
1953. A natural history of western trees. 751 pp., illus. Boston: Houghton Mifflin Co.

219. Peavey, George W.
1922. Oregon's commercial forests. Oreg. State Board Forest. Bull. 2 (rev. 1929), 94 pp., illus.

Alaska-cedar is described and mentioned briefly under minor species. The tree occurs between 2,500- and 7,000-foot elevation in Oregon.

220. Peck, Morton Eaton.
1961. A manual of the higher plants of Oregon. Ed. 2, 936 pp., illus. Corvallis: Oreg. State Univ. Press.

221. Penhallow, D. P.
1896. The generaic characters of the North American Taxaceae and Coniferae. Proc & Trans. Roy. Soc. Can., ser. 2, vol. 2, sect. 4, pp. 33-57 plus 6 plates.

222. Penhallow, David Pearce.
1907. A manual of the North American gymnosperms, exclusive of the cycadales but together with certain exotic species. 374 pp. plus 55 plates. Boston: Ginn & Co., Athenaeum Press.

223. Perry, R. S.
1939. Yellow cedar (*Chamaecyparis nootkatensis*) [Lamb.] Spach: its characteristics, properties and uses. British Columbia Lumberman 23: 30-31.

The natural range of the species is the Pacific coast of North America from southern Alaska to northern Oregon. The total estimated stand is about 6 billion board feet, half of which is found on the western side of the coast mountains in British Columbia. It usually grows in mixtures with Sitka spruce, western hemlock, fir, or western redcedar. It averages 85 feet in height and 3 feet in diameter. It is a slow-growing species and is susceptible to heart rot, which makes it difficult to obtain large amounts of high-grade lumber. The wood is clear, yellow in color, straight grained, light in weight, of average strength and toughness, has a low shrinkage factor, and is of high durability. Many of its uses are listed. The strength properties of this and other western commercial species are tabulated.

224. _____
1954. Yellow cedar: its characteristics, properties, and uses. Can. Dep. North. Aff. & Nat. Resources Forest. Br. Bull. 114, 19 pp., illus.

A comprehensive discussion of Alaska-cedar, with emphasis on the tree in British Columbia. Nomenclature, locality, supply, silvical characteristics, wood characteristics, seasoning, workability, finishing, durability, marketing, and uses are discussed, and strength properties tabulated.

225. Phillips, E. W. J.
1948. Identification of softwoods by their microscopic structure. Forest Prod. Res. Bull. 22, London, 56 pp., illus. (Reprinted 1963.)

226. Piper, Charles V.
1906. Flora of the State of Washington. Contrib. U.S. Nat. Herb., Vol. 11, 637 pp., illus.

227. _____ and Beattie, R. Kent.
1915. Flora of the northwest coast, including the area west of the summit of the Cascade Mountains from the 49th parallel south to the Calapooya Mountains on the south border of Lane County, Oregon. 418 pp. Lancaster, Pa.: New Era Printing Co.

228. Platt, Rutherford.
1952. American trees; a book of discovery. 256 pp., illus. New York: Dodd, Mead & Co. (Reprinted 1953 as "A Pocket Guide to the Trees." Cardinal ed. New York: Pocket Books, Inc.)

229. Plummer, Fred G.
1900. Mount Rainier Forest Reserve, Washington. U.S. Geol. Surv. 21st Annu. Rep. 1899-1900, Part 5, Forest Reserves: 81-143, illus.

230. Pomeroy, Kenneth B., and Dixon, Dorothy.
1966. These are the champs. Amer. Forests 72(5): 14-35.

The largest reported Alaska-cedar tree in the United States is located in Mount Rainier National Park, Washington. It is 25 feet 6 inches in circumference, 134 feet high, and has a 25-foot spread.

231. Prentice, R. M.
1963. Forest lepidoptera of Canada, recorded by the forest insect survey. Vol. 1. Lasiocampidae, Thyatiridae, Drepanidae, Geometridae. Can. Dep. Forest., Forest Entomol. Br. Pub. 3 (1013): 283-543, illus.

232. Preston, Richard J., Jr.
1961. North American trees (exclusive of Mexico and tropical United States). Ed. 2, 395 pp., illus. Ames: Iowa State Coll. Press.

Gives the general description, range, and silvical characteristics, of Alaska-cedar.

233. Querengasser, F.
1953-54. Die grune Douglasie (*Pseudotsuga taxifolia*, Douglas fir, red fir) und ihre begleitholzarten. (The green Douglas fir and its associated trees.) Deutsch. Dendrol. Ges. Mitt. 58: 127-141. (In German.)

234. Randall, Warren R.
1965. Manual of Oregon trees and shrubs. 234 pp., illus. Corvallis: Oregon State Univ. Book Stores, Inc.

235. Rayner, R. W.
1963. The diseases of Cupressus and Chamaecyparis. Inter-African Phytosanitary Comm., London. 1-6 pp.

Lists the following disease of Alaska-cedar in the U.S.A.: *Gymnosporangium nootkatense* Trul. Hosts--telial: *Chamaecyparis nootkatensis*, aecial: *Sorbus* spp., *Malus rivularis*. Causes galls of leaves and tender shoots. Listed as a disease of little or no economic importance.

236. Record, Samuel J.
1919. Identification of the economic woods of the United States; including a discussion of the structural and physical properties of wood. Ed. 2 (rev. and enl.), 157 pp. plus 6 plates. New York: John Wiley & Sons, Inc.; London: Chapman & Hall, Ltd.

Wood identification with key.

237. _____
1934. Identification of the timbers of temperate North America, including anatomy and certain physical properties of wood. 196 pp. plus 6 plates. New York: John Wiley & Sons, Inc.

238. _____ and Hess, Robert W.
1943. Timbers of the new world. 640 pp., illus. New Haven: Yale Univ. Press.

239. Rehder, A.
1940. Manual of cultivated trees and shrubs hardy in North America. Ed. 2 (rev. and enl.), 996 pp., illus. New York: Macmillan Co. (Reprinted 1947, 1949.)

240. Rehder, Alfred.
1949. Bibliography of cultivated trees and shrubs hardy in the cooler temperate regions of the northern hemisphere. Arnold Arboretum, Harvard Univ., 825 pp.

Gives 31 references to the sources of botanical names, valid names, and synonyms.

241. Rennerfelt, Erik, and Nacht, Gertrud.
1955. The fungicidal activity of some constituents from heartwood of conifers. Svensk Bot. Tidskr. 49(3): 419-432.

Nootkatin, a heartwood substance from Alaska-cedar, was found to inhibit fungus growth at 0.001- to 0.002-percent concentrations. Chamic acid from Alaska-cedar heartwood inhibited fungi at 0.01-0.02 percent.

242. Resch, Helmuth, and Ecklund, Barton A.
1963. Moisture content determination for wood with highly volatile constituents. Forest. Prod. J. 13(11): 481-482.

The high volatile-oil content of Port-Orford-cedar and Alaska-cedar affected moisture determination by the oven method. Correction factors for electrical resistance meters were based on moisture determinations by the Karl Fischer method, which were consistently lower.

243. _____ and Ecklund, Barton A.
1963. Electrical moisture meter calibration for woods containing highly volatile constituents. Calif. Forest., Forest Prod. 34: 1-4.

244. Robinson, Robena Claire.
1960. Black stain in yellow cedar *Chamaecyparis nootkatensis* (D. Don) Spach. M.A. thesis, Univ. Brit. Columbia, Dep. Biol. & Bot. 54 pp. illus.

245. Rowe, J. S.
1959. Forest regions of Canada. Can. Dep. North. Aff. & Nat. Resources Forest. Br. Bull. 123, 71 pp., illus. (Revision of "A forest classification for Canada," by W. E. D. Halliday, Can. Dep. North. Aff. & Natur. Resources Bull. 89. 1937.)

246. Rudnicki, J. M.
1951. Timber fasteners. *In* Canadian woods; their properties and uses. Ed. 2, pp. 305-320, illus. Ottawa: King's Printer.

247. St. John, Harold, and Hardin, Edith.
1929. Flora of Mt. Baker. Mazama 11(12): 52-102, illus.

248. _____ and Warren, Fred A.
1937. The plants of Mount Rainier National Park, Washington. Amer. Midland Natur. 18(6): 952-957.

249. Sargent, C. S.
1885. The woods of the United States. With an account of their structure, qualities, and uses. With geographical and other notes upon the trees which produce them. 203 pp., illus. New York: D. Appleton & Co.

250. Sargent Charles S.
1884. Report on the forests of North America (exclusive of Mexico). 612 pp., illus. U.S. Dep. Int., Census Off.

Gives a brief description of the tree and its occurrence in the United States, with information on wood properties.

251. Sargent, Charles Sprague.
1933. Manual of the trees of North America (exclusive of Mexico). Ed. 2, 910 pp., illus. Boston, New York: Houghton Mifflin Co. (Reprinted 1961. 2 vol. New York: Dover Publ., Inc.)

252. Scheffer, T. C., and Eslyn, W. E.
1961. Effect of heat on the decay resistance of wood. Forest Prod. J. 11(10): 485-490.

Wet-heating schedules lowered decay resistance of some species tested, including Alaska-cedar. No decrease in resistance occurred at 180° F. for 48 hours, but decay resistance was lowered after heating for 1 hour at 300° F.

253. Schmidt, R. L.
1955. Some aspects of western redcedar regeneration in the coastal forests of British Columbia. Brit. Columbia Forest Serv. Res. Note 29, 10 pp., illus.

Adventitious rooting of yellow cedar was noted on Vancouver Island.

254. _____
1958. Climate and the altitudinal distribution of conifers. Brit. Columbia Forest Serv., Forest Res. Rev. 1957: p. 14.

Describes a study in Elk Valley, Vancouver Island, on two aspects between 1,000 and 4,600 feet. Length of the frost-free season decreased at the rate of 2.8 days per 500 feet of elevation within the altitudinal range of Douglas-fir, western hemlock, and western redcedar, but above this level the frost-free season decreased 36 days in 500 feet. Alaska-cedar, subalpine fir, Pacific silver fir, and mountain hemlock were not affected by the temperature boundary. Alaska-cedar occurs from 1,000- to 5,000-foot elevation at the study site.

255. Scott, David R. M.
1962. Plant associations of western Washington. Univ. Wash. Arboretum Bull. 25: 11-14, 26.

256. Shaw, C. G., and Harris, M. R.
1960. Important diseases and decays of trees native to Washington. Wash. State Univ. Agr. Ext. Serv. Bull. 540, 35 pp.

257. Shaw, Charles Gardner.
1958. Host fungus index for the Pacific Northwest. I. Hosts. Wash. Agr. Exp. Sta. Circ. 335, 127 pp.

258. Sheldon, E. P.
1904. The forest wealth of Oregon. 32 pp., illus. Lewis & Clark Exposition Comm., Portland.

259. Sigafoos, Robert S.
1958. Vegetation of northwestern North America, as an aid in interpretation of geologic data. U.S. Geol. Surv. Bull. 1061-E: 165-185, illus.

260. Slavin, Arthur D.
1931. Some conifers cultivated in the United States. *In* Conifers in cultivation: the report of the conifer conference held by the Royal Horticultural Society. pp. 86-150, illus. London: Roy. Hort. Soc.

Describes many species, including Alaska-cedar, grown in several aboreta in the U.S.

261. Smith, J. H. G., and Ker, J. W.
1957. Timber volume depends on D^2H. British Columbia Lumberman 41(9): 28, 30.

Constants a and b for 24 tree species are given for the combined variable formula in which tree volume (V) is estimated in terms of d.b.h. squared (D^2) and total height (H).

$$V = a + b \frac{D^2H}{100}$$

The same constants are used for Alaska-cedar and western redcedar, a set being tabulated separately for coast immature, coast mature, and interior trees, by diameter classes of 0 to 26 inches and 27 inches and above. Standard errors for very tall and very short trees are also tabulated.

262. Smith, J. Harry G., and Breadon, Robert E.
1964. Combined variable equations and volume-basal area ratios for total cubic-foot volumes of the commercial trees of B.C. Forest. Chron. 40: 258-261.

263. Society of American Foresters.
1954. Forest cover types of North America (exclusive of Mexico). Report of the committee on forest types. 67 pp.

The timber types containing Alaska-cedar have been slightly modified in the 1964 edition.

264. _____
1964. Forest cover types of North America (exclusive of Mexico). 67 pp.

A description of the composition, nature, and occurrence of the following numbered timber types in which Alaska-cedar occurs in mixture with other tree species: high elevations (in the mountains), mountain hemlock-subalpine fir (205); middle elevations (interior), western hemlock (224), Pacific silver fir-hemlock (226), western redcedar-western hemlock (227), western redcedar (228).

265. Sødergaard, Poul.
1965. Kimplanternes morfologi og udvikling hos de I skovbruget almindeligt anvendte naletraeer. (Identification of 1 and 2 year seedlings of 25 conifers.) Dansk Dendrol. Arsskr. 2(11): 185-247, illus. (In Danish.)

266. Southwood, T. R. E.
1962. *Chamaecyparis nootkatensis* (D. Don) Spach a new host plant for *Cyphostethus tristriatus* (F.) (Hem., Acanthosomatidae). Entomol. Monogr. 98(1180/1183): 250.

Cyphostethus tristriatus (F.), a green and brown bug, formerly thought to be virtually monophagous on *Juniperus communis* L., was found to feed and breed on *Chamaecyparis nootkatensis* planted in Ascot, Berkshire.

267. Spada, Benjamin.
1962. Forest statistics for Pierce County, Washington. U.S.D.A. Forest Serv., Pacific Northwest Forest & Range Exp. Sta. Forest Surv. Rep. 141, 26 pp., illus.

Volume of Alaska-cedar growing stock in Pierce County, Washington, in 1959 was reported to be 16 million board feet (International 1/4-inch rule). Volume of sawtimber on commercial forest land was 15 million board feet (Scribner). Area of commercial forest land occupied by Alaska-cedar type was 1,000 acres, all of which was in public ownership.

268. _____ and Usher, Jack H.
1955. Forest statistics for Yakima County, Washington. U.S.D.A. Forest Serv., Pacific Northwest Forest & Range Exp. Sta., Forest Surv. Rep. 121, 29 pp.

269. Spaulding, Perley.
1956. Diseases of North American forest trees planted abroad. An annotated list. U.S. Dep. Agr. Handb. 100, 144 pp.

270. Stamm, Alfred J.
1929. The capillary structure of softwoods. J. Agr. Res. 38: 23-67.

Examines in detail, by dynamic physical methods, the capillary structure of six western conifers, including Alaska-cedar.

271. Stone, Herbert.
1904. The timbers of commerce and their identification. 311 pp., illus. London: William Rider & Son, Ltd.

272. Streets, R. J.
1962. Exotic forest trees in the British Commonwealth. 765 pp., illus. Oxford: Clarendon Press.

273. Sudworth, George B.
1897. Nomenclature of the arborescent flora of the United States. U.S. Dep. Agr. Div. Forest. Bull. 14, 417 pp.

274. _____
1898. Check list of the forest trees of the United States, their names and ranges. U.S. Dep. Agr. Bull. 17, 144 pp.

Lists the following common names in use: yellow cedar, Sitka cypress, yellow cypress, Nootka cypress, Nootka Sound cypress, Alaska ground cypress, Alaska cypress. Fourteen varieties are distinguished in cultivation: *viridifolia* Sudw., *cinerascens* Sudw., *cinerascens genuina* Sudw.,

cinerascens aureo-discolor Sudw., *argenteo-varians* Sudw., *aureo-versicolor* Sudw., *zanthophylla* Sudw., *pendens* Sudw., *compacta* (Veitch) Beissn., *compressa* Beissn., *nidiformis* Beissn., *albo-picta* Sudw., *aureo-viridis* (Hort. Kew.) Sudw., *picta* Sudw. Accepted scientific and common names are, *Chamaecyparis nootkatensis* (Lamb.) Spach, yellow cedar.

275. _____
1908. Forest trees of the Pacific slope. U.S. Dep. Agr., 441 pp.

276. _____
1927. Check list of the forest trees of the United States, their names and ranges. U.S. Dep. Agr. Misc. Circ. 92, 295 pp.

277. Taylor, R. F., and Little, E. L., Jr.
1950. Pocket guide to Alaska trees. U.S. Dep. Agr. Handb. 5, 63 pp., illus. (Revision of Misc. Pub. 55.)

278. Taylor, Walter P.
1922. A distributional and ecological study of Mount Rainier, Washington. Ecology 3: 214-236.

279. Tessier, J. P., and Knapp, F. M.
1961. Cost analysis of a mobile logging operation on the U. B. C. research forest. Univ. Brit. Columbia Fac. Forest. Res. Pap. 41, 16 pp., illus.

Gives log specifications used in bucking.

280. Titmuss, F. H.
1965. Commercial timbers of the world. Ed. 3, enl., 277 pp. London: Technical Press, Ltd.

Briefly describes Alaska-cedar wood.

281. Troll, C.
1955. Der Mount Rainier und das mittlere Cascaden-Gebirge. (Mount Rainier and the middle Cascade mountains.) Erkunde 9: 264-274, illus. (In German.)

282. Troup, R. S.
1932. Exotic forest trees in the British Empire. 259 pp. Oxford: Clarendon Press.

283. U.S.D.A. Forest Service.
1948. Woody-plant seed manual. U.S. Dep. Agr. Misc. Pub. 654, 416 pp., illus.

One pound of cleaned seed contains from 66,000 to 180,000 seeds, with an average of 108,000. Germination is characteristically low with germinative capacity ranging from 0 to 2 percent and potential germination from 22 to 57 percent. Stratification for 60-90 days at 41° F. is recommended to break embryo dormancy. The seed is fragile.

284. _____
1955. Wood handbook. U.S. Dep. Agr. Handb. 72, 528 pp., illus.

Contains basic information on wood as a material of construction with data for its use in design and specification.

285. _____
1961. Standard terms for describing wood. Ed. 3 (rev.), 12 pp. Forest Prod. Lab.

Presents a series of standard terms for describing properties of various species of wood, including Alaska-cedar, as developed by the Forest Products Laboratory.

286. _____
1963. Characteristics of Alaska woods. Forest Prod. Lab. U.S.D.A. Forest Serv. Res. Pap. FPL-1, 64 pp., illus., tables.

A general discussion of mechanical properties, pulp and papermaking characteristics, seasoning data, and preservative treatment of various Alaska woods, including Alaska-cedar. Includes summary tables on strength properties, pulp processes and yields, and drying schedules.

287. _____
1966. 1966 seed and planting stock dealers. Tree Planters' Note 78, 29 pp.

The directory lists four sources of Alaska-cedar seed and one source of planting stock.

288. Van Dersal, William R.
1938. Native woody plants of the United States, their erosion control and wildlife values. U.S. Dep. Agr. Misc. Pub. 303, 362 pp., illus.

289. Veer, J. J. G., and King, F. W.
1963. Moisture blistering of paints on house siding. Can. Dep. Forest. Pub. 1024, 25 pp., illus.

Free water is necessary for paint blistering and water vapor alone does not cause it. Susceptiblity to paint blistering decreased by species in this order: *Thuja plicata, Pseudotsuga taxifolia, Chamaecyparis nootkatensis, Pinus strobus, Juniperus virginiana, Pinus resinosa,* and *Picea* spp.

290. Verrall, Arthur F.
1968. Poria incrassata rot: Prevention and control in buildings. U.S. Dep. Agr. Tech. Bull. 1385, 27 pp., illus.

291. Wade, Leslie Keith.
1965. Plant associations of the sphagnum bog ecosystem at Tofino, Vancouver Island. *In* 1964 progress report "Ecology of the forests of the Pacific Northwest," V. J. Krajina, ed. pp. 15-16. Univ. Brit. Columbia, Dep. Biol. & Bot.

A report on the vegetation of a marine terrace adjacent to the coastal beaches of Wickannish Bay, near Tofino, Vancouver Island. Ten tentative plant community types are described, two of which contain Alaska-cedar: *Pinus contorta-Chamaecyparis nootkatensis*--a community restricted to bog periphery and incorporating both bog and forest elements in its composition--and Bog Forest--a forest of characteristically dwarfed conifers surrounding the bog area. The latter is extensive and probably represents the final stage in succession from the bog. The dwarfed and peculiarly shaped condition of the trees is due to poor drainage and scarcity of nutrients. Principal trees are *Pinus contorta*, *Thuja plicata*, *C. nootkatensis*, *Tsuga heterophylla*, and *Taxus brevifolia*.

292. West, W. I.
1949. A collection of Oregon woods: Prog. Rep. 1., Circ. 1, 31 pp., illus. Corvallis: Oreg. State Coll.

Purpose of the report was to make the collection's existence known. Lists seven specimens of Alaska-cedar.

293. Whitford, H. N., and Craig, Ronald D.
1918. Forests of British Columbia. 409 pp., illus. Can. Comm. Conserv., Ottawa.

In the vicinity of the Strait of Georgia, Alaska-cedar is seldom found below 2,000 feet and extends up to 5,000 feet. Northward, it gradually descends to tidewater at Knight Inlet. Clear yellow cypress is perhaps the highest priced lumber produced in the province, as high as $100 per thousand board feet having been paid for it by local boatbuilders. There is an estimated 4,056,000,000 board feet of standing timber in the province.

294. Whittaker, R. H.
1961. Vegetation history of the Pacific Coast States and the central significance of the Klamath region. Madrono 16: 5-23.

The range of Alaska-cedar in the Klamath region suggests that it is a relict from glacial time. It is confined to three isolated patches in the extreme southern end of its range, two of these reported by Mason (1941) and one found by the author on Preston Peak.

295. Winkenwerder, Hugo.
1920. Short keys to the trees of Oregon and Washington. 16 pp. Seattle: Univ. Wash. Press.

296. Witt, J. A.
1959. A cross section of arboretum plant introductions. Univ. Wash. Arboretum Bull. 22(4): 121-123, 138.

Cupressocyparis leylandii has been planted in the University of Washington arboretum and has made good growth. It promises to be one of the best evergreen screening and hedge plants for the area.

297. Wolf, Carl B.
1948. The new world cypresses. Part I, Taxonomic and distributional studies of the new world cypresses. El Aliso 1: 1-250.

The author quotes in its entirety an article describing hybridization between *Cupressus macrocarpa* and *Chamaecyparis nootkatensis* (Jackson, A. B., and Dallimore, W., 1926. A new hybrid conifer. Bull. Misc. Inf. Kew. 3, 113-114). The author states that he had not seen either living or pressed specimens of the resulting hybrid (*Cupressocyparis leylandii*), but that the evidence presented by Jackson and Dallimore for its origin is convincing, and he concedes that they are probably correct in their conclusion.

298. Wood, R. F.
1955. Studies of north-west American forests in relation to silviculture in Great Britain. Brit. Forest. Comm. Bull. 25, 42 pp., illus.

There appears to be no generalized climatic limit in Great Britain for *Chamaecyparis nootkatensis*. The species has low requirements and is worthy of trial at high elevations.

299. Wyman, Donald.
1951. Trees for American gardens. 376 pp., illus. New York: Macmillan Co.

The species does not have a wide distribution in the United States because it requires a moist climate. It is not used much on the Pacific coast, but is considered one of the finest trees where it can be grown.

300. Zavarin, Eugene, Smith, Rosalin M., and Anderson, Arthur B.
1959. Paper chromatography of the tropolones of Cuppressaceae. II. J. Org. Chem. 24(9): 1318-1321.

Heartwood of 14 species of Cupressaceae were examined by paper partition chromatography for the tropolones present, and the results are discussed.

301. Zehetmayr, J. W. L.
1954. Experiments in tree planting on peat. Brit. Forest. Comm. Bull. 22, 110 pp., illus.

In tests on *Scirpus-Calluna-Molina*, Alaska-cedar has grown slowly, even when fertilized with phosphate, with heights of 3 feet at 12 years after planting. Unfertilized controls reached 2 feet in height. On poorer soil, Alaska-cedar reached 3 to 4 feet 16 years after planting. Smaller plants were damaged by frost in the spring of 1947.

SUBJECT INDEX

Arboreta 174, 177, 260, 296

Branching habit. 22, 71

Cambial growth 28, 29, 30, 31, 33, 34, 35

Chemical constituents. 16, 58, 61, 83, 84, 96, 97, 98, 99, 100, 118, 122, 139, 175, 180, 206, 207, 241, 300

Cotyledons 106

Dendrology (see identification)

Description (tree) 2, 6, 10, 11, 20, 44, 46, 51, 53, 74, 101, 105, 111, 119, 130, 134, 144, 147, 181, 193, 199, 201, 203, 204, 218, 223, 226, 227, 234, 238, 250, 272, 275, 293

Discovery. 128, 134, 183

Diseases 10, 86, 235, 241, 244, 256, 257, 269, 290

Durability 15, 63, 173, 223, 224, 241, 252

Ecology. 6, 7, 25, 36, 38, 54, 64, 69, 70, 91, 102, 107, 108, 109, 121, 123, 126, 129, 141, 143, 145, 159, 160, 164, 166, 167, 168, 169, 170, 171, 172, 192, 200, 203, 208, 209, 210, 211, 248, 254, 255, 278, 281, 291

Elevation. 6, 15, 38, 51, 53, 54, 64, 79, 88, 89, 111, 112, 113, 114, 115, 121, 126, 130, 145, 219, 226, 229, 254, 293

Epiphytes. 64

Exotic planting
- Britain 5, 26, 62, 74, 85, 87, 90, 182, 183, 266, 272, 282, 298, 301
- Czechoslovakia. 148, 174
- Denmark 128
- Norway. 37, 110, 124, 146

Extractives. 39, 96, 97, 98, 99, 100, 122, 175, 206, 207, 241, 300

Flowering. 71, 89, 119

Form 45, 261

Fusiform initials 28, 30, 31, 34, 35

Grading rules 2, 9

Growth rate 203, 216, 301

Habitat 6, 7, 10, 15, 38, 40, 53, 54, 91, 105, 112, 114, 115, 123, 141, 164, 170, 200, 208, 210, 211, 245, 248, 275, 278, 291

Historical. 13, 26, 27, 128, 173, 183

Horticulture. 1, 17, 65, 85, 296, 299

Hybrids 36, 90, 105, 127, 156, 182, 212, 296, 297

Identification (tree) 4, 12, 18, 19, 20, 21, 40, 41, 46, 47, 50, 59, 66, 67, 74, 75, 92, 93, 101, 106, 111, 117, 131, 133, 140, 149, 151, 158, 161, 178, 181, 191, 193, 195, 199, 200, 214, 220, 222, 226, 227, 232, 234, 238, 239, 247, 250, 251, 258, 265, 271, 275, 277, 282, 288, 295

Insects 73, 81, 82, 132, 194, 198, 231, 266

Layering. 15

Leaf oil. 39, 180

Logging 279

Longevity (age) 119, 203, 275

Marketing 152, 153, 154, 184, 224, 293

Morphology 22, 23, 71

Nomenclature. 2, 26, 40, 49, 76, 119, 157, 158, 162, 179, 224, 240, 250, 273, 274, 276

Occurrence
- Alaska 10, 69, 105, 112, 141, 196, 201
- British Columbia 60, 121, 123, 129, 141, 144, 192, 213, 245, 254, 291, 293
- California 114, 190, 294
- Oregon 7, 25, 38, 40, 52, 68, 114, 141, 176, 219, 294
- Washington 6, 15, 38, 51, 52, 53, 54, 64, 79, 95, 102, 113, 115, 141, 145, 200, 229, 247, 248, 278, 281

Ornamental planting (see Horticulture)

Physiology. 28, 29, 30

Plant associates 6, 40, 52, 54, 64, 68, 95, 123, 126, 130, 141, 143, 145, 167, 170, 190, 192, 208, 209, 210, 211, 223, 224, 263, 264, 291, 294

Plant geography. 7, 69, 116, 129, 143, 150, 159, 294

Planting stock 287

Pollen 88, 89

Provenance trials. 37, 124

Resources (see Supply)

Range (see also Occurrence). 10, 11, 36, 38, 40, 42, 60, 68, 69, 72, 77, 87, 95, 105, 111, 113, 114, 115, 116, 121, 123, 131, 133, 141, 143, 147, 151, 164, 176, 186, 190, 192, 196, 199, 200, 204, 213, 214, 218, 219, 223, 224, 226, 227, 229, 250, 251, 259, 275, 277, 293, 294

Roots. 15, 253

Seed
- dealers 287
- dormancy. 183, 283
- germination 272, 283
- weight. 283
- production. 135

Seedling identification. 106, 265

Selective breeding 36

Silvical characteristics 2, 10, 36, 43, 74, 87, 105, 119, 144, 147, 186, 203, 223, 224, 232, 275

Site 130, 209

Soil 112

Species trials 5, 37

Spiral grain 33

Stature (size) 6, 8, 27, 53, 62, 78, 85, 90, 144, 147, 176, 203, 223, 224, 230

Succession 108, 109, 141, 142, 160, 291

Supply 43, 44, 48, 49, 136, 137, 138, 153, 154, 186, 188, 197, 202, 223, 224, 267, 268, 293

Taxonomy 7, 139

Tolerance 24, 141, 170, 275

Uses. 2, 3, 10, 11, 13, 27, 39, 43, 56, 63, 74, 94, 105, 119, 128, 131, 134, 144, 147, 173, 184, 186, 187, 188, 193, 201, 215, 217, 218, 223, 224, 249, 284

Value (see Marketing)

Varieties 10, 20, 74, 105, 111, 162, 240, 274

Vegetative reproduction 15, 80, 253

Volume tables 57, 261, 262

Wood
- anatomy. 120
- chemistry. . . 16, 61, 83, 84, 96, 97, 98, 99, 100, 118, 122, 175, 206, 300
- finishing. 224, 289
- identification . . 55, 56, 104, 120, 125, 134, 165, 225, 234, 236, 237, 280
- moisture 242, 243
- properties 2, 3, 14, 42, 43, 44, 49, 55, 63, 87, 94, 103, 131, 134, 155, 163, 173, 184, 185, 186, 187, 188, 189, 205, 215, 216, 217, 223, 224, 246, 249, 250, 270, 280, 284, 285, 286, 289
- seasoning. 14, 224, 242, 243, 252, 286
- structure. 29, 31, 32, 33, 55, 56, 125, 221, 222, 225, 270
- weight 155

COMMON AND SCIENTIFIC NAMES OF TREE SPECIES MENTIONED IN LITERATURE REFERENCES

Alaska-cedar	*Chamaecyparis nootkatensis* (D. Don) Spach
Atlantic white-cedar	*Chamaecyparis thyoides* (L.) B. S. P.
Baldcypress	*Taxodium distichum* (L.) Rich.
Brewer's spruce	*Picea breweriana* S. Wats.
California red fir	*Abies magnifica* A. Murr.
Common juniper	*Juniperus communis* L.
Douglas-fir	*Pseudotsuga menziesii* (Mirb.) Franco
Eastern redcedar	*Juniperus virginiana* L.
Eastern white pine	*Pinus strobus* L.
Englemann spruce	*Picea engelmannii* Parry
Grand fir	*Abies grandis* (Dougl.) Lindl.
Hiba Arbor-vitae	*Thujopsis dolabrata* (Lif.) Sieb. & Zucc.
Hinoki cypress	*Chamaecyparis obtusa* (Sieb. & Zucc.)
Incense-cedar	*Libocedrus decurrens* Torr.
Leyland cypress	*Cupressocyparis leylandii*
Lodgepole pine	*Pinus contorta* Dougl.
Monterey cypress	*Cupressus macrocarpa* Hartw.
Mountain hemlock	*Tsuga mertensiana* (Bong.) Carr.
Noble fir	*Abies procera* Rehd.
Northern white-cedar	*Thuja occidentalis* L.
Pacific silver fir	*Abies amabilis* (Dougl.) Forbes
Pacific yew	*Taxus brevifolia* Nutt.
Para angelwood	*Dicorynic paraensis*
Port-Orford-cedar	*Chamaecyparis lawsoniana* (A. Murr.) Parl.
Red pine	*Pinus resinosa* Ait.
Redwood	*Sequoia sempervirens* (D. Don) Endl.

Shasta red fir	*Abies magnifica* var. *shastensis* Lemm.
Sitka spruce	*Picea sitchensis* (Bong.) Carr.
Subalpine fir	*Abies lasiocarpa* (Hook.) Nutt.
Western hemlock	*Tsuga heterophylla* (Raf.) Sarg.
Western larch	*Larix occidentalis* Nutt.
Western redcedar	*Thuja plicata* Donn
Western white pine	*Pinus monticola* Dougl.
Whitebark pine	*Pinus albicaulis* Engelm.
White oak	*Quercus alba* L.

Harris, A. S.
1969. Alaska-cedar. A bibliography with abstracts. U.S.D.A. Forest Serv. Res. Pap. PNW-73, 47 pp. Pacific Northwest Forest & Range Exp. Sta., Portland, Oregon.

This bibliography contains references to North American and European literature containing information about Alaska-cedar (*Chamaecyparis nootkatensis* (D. Don) Spach).

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